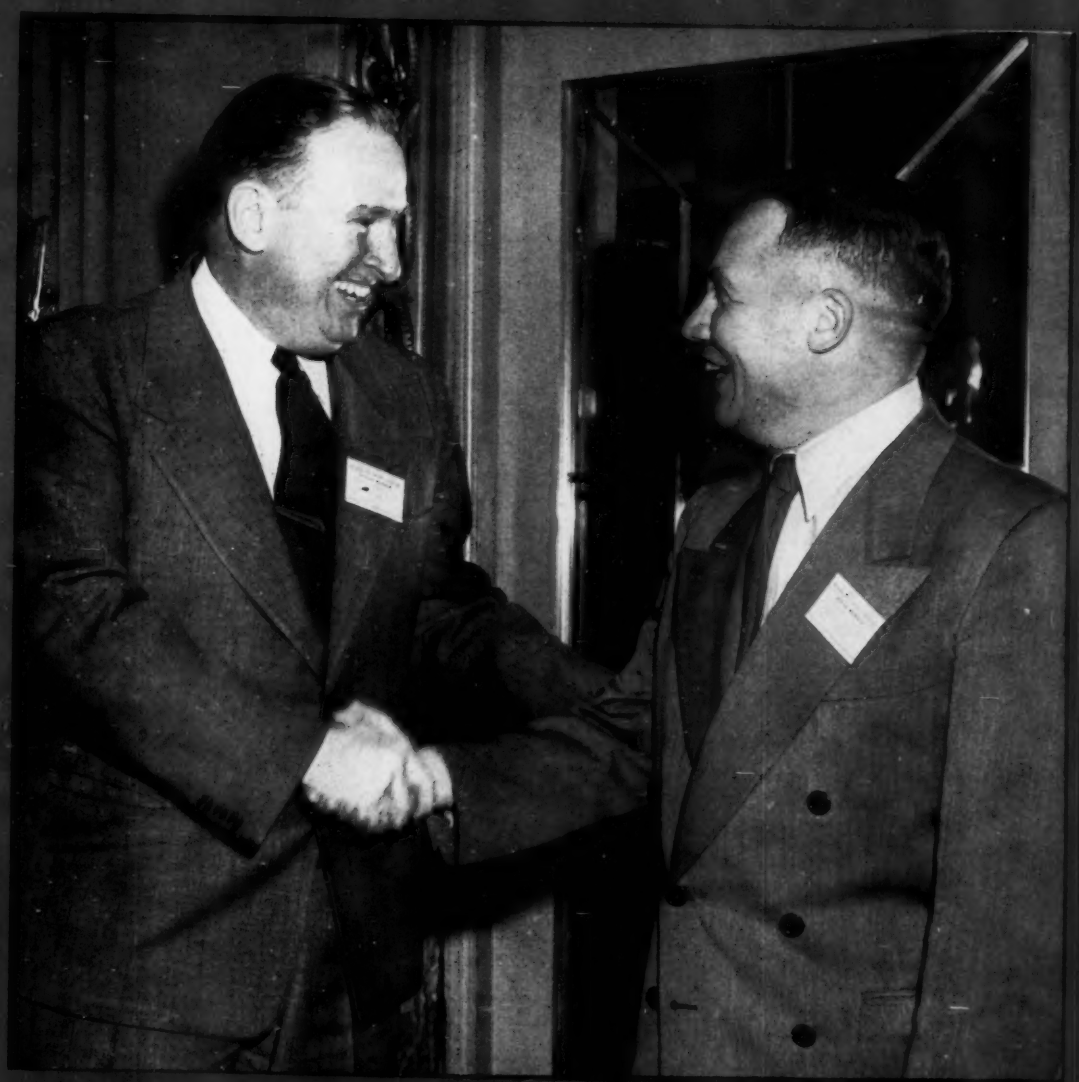
NOVEMBER
1950

PEST CONTROL

FORMERLY PESTS AND THEIR CONTROL



Retiring Harold E. Jennings vigorously congratulates newly elected NPCA prexy, J. Edwin Sameth.

MAGAZINE OF THE PEST CONTROL
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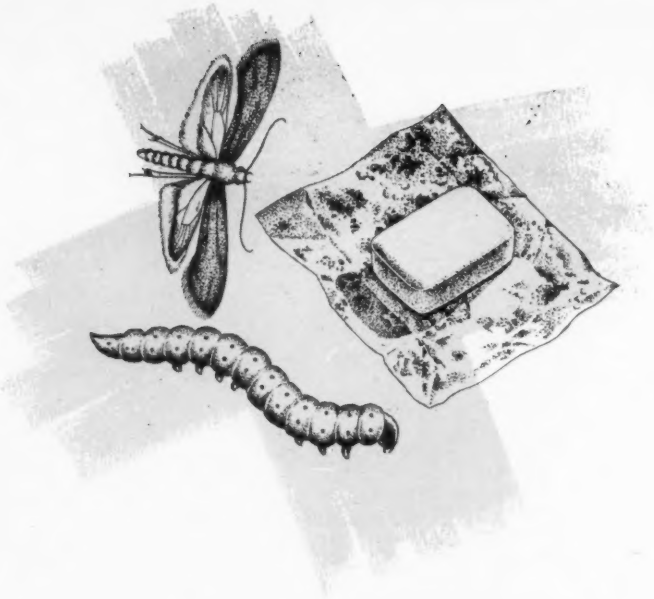

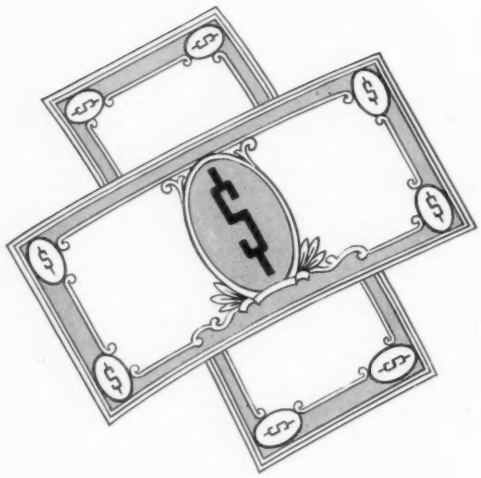

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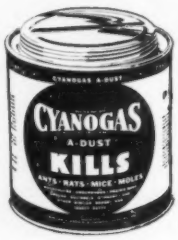

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Servicemanpower

Trying to anticipate the expansion of military manpower requirements as they affect the service crews of most pest control firms in the coming months can be approached intelligently if use is made of information coming from Selective Service.

To maintain its present goal of 3,000,000 men, Selective Service has advised industry not to request occupational deferments for men under the age of 26, except in unusual cases, and to utilize those who cannot meet the physical and mental requirements of the services. Although men in the 26 to 35 age group are not expected to be called in the forseeable future. Selective Service suggests that plans be made to permit the release of this age group should a greater war effort be necessary. Men 35 or over may be retained by industry indefinitely since it is current thinking that it will be better to use younger men to fight.

The fact that men under 26 should be regarded as available for military service must be accepted and this can be more easily done if it is realized that their induction will leave less of a void since they have less experience and are consequently easier to replace.

Should the international situation become more critical, older men also will be called, but experience has shown that few men over 38 can be used effectively in the service. It is more than probable, then, that the age for induction will not exceed 35.

We would infer from this that Selective Service suggest that industry concentrate on training men over 35 for key positions. This may be difficult for pest control companies, but every effort must be made to establish an older, well-trained group of supervisors who can assume a burden of increased work should younger men be inducted.

PEST CONTROL
FORMERLY PESTS AND THEIR CONTROL

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NOVEMBER, 1950 Vol. 18, No. 11

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LETTERS

Environmental Sanitation

Much emphasis lately has been placed on the importance of PCOs including more sanitation services in their work. We've heard such terms as "environmental sanitation". Just exactly what all is included in environmental sanitation?

Albert Abel

Tacoma, Washington

Perhaps the best answer to this question is to quote directly from an official declaration of the American Public Health Association adopted October 9, 1940 and supplemented in 1941 and 1943, which outlines essential administrative functions connected with environmental sanitation:

"Sanitation: The control of the material environment of man in the interest of human survival, comfort and use. The specific responsibilities in this respect include (Not necessarily in the order of local importance):

1. Safeguarding all water supplies, both public and private, commercial and household, so that the purity of the water for dietary, cleansing, or recreational use may be universal.

2. Securing the sanitary disposal of human and industrial wastes in a manner to avoid nuisance, and prevent the pollution of foods or water supply.

3. Supervision of the production and distribution of milk, and milk products, by licensing, inspection, and laboratory tests, to prevent the sale of any but a clean wholesome pasteurized milk of standard food value.

4. Supervision of the production, processing, and distribution of foodstuffs, including shellfish, and of drugs and devices offered to the public for treatment of sickness.

5. Supervision of all places of human habitation to secure adequate light, air, water, sanitary necessities, protection from inclemencies of weather, and to prevent overcrowding of occupants. Also control over the environmental sanitation of public camp sites, swimming pools, bathing beaches, parks, and other public properties.

6. Control of mosquitoes, other insects, rats and other vermin, such as may affect the public health.

7. Control over the environmental conditions of employment.

8. Control over atmospheric pollution by smoke, dust, and harmful fumes.

Psocid Control

Respecting your request for suggestions on psocid control I submit the following:

It hardly seems necessary to refer to the dry heat method though it is the only specific remedy, but it is altogether impractical, especially since there are no companies in America that manufacture portable dry heating units large enough to be utilized for this purpose. The principal concern in such instances should be to check the cause, if at all possible. The environments under which the pestcops (pest control operators) are compelled to work do not always permit them the full use of the most practical and effective means at their disposal.

Much can be done to control the mold lice already established in the household, but to prevent new droves from entering presents an almost insurmountable problem.

At any rate controls should and can, in most instances, begin in the basement areas. Here we must first consider the mold conditions that form in the walls. Thus, by eliminating the mold we, in effect, eliminate to a considerable extent their food supply. This can be done in the following, but rather arduous manner: unslaked lime in fine powder form should be blown on walls and into cracks and crevices with a suitable duster. The walls must first be dampened if dry. The lime slakes with the adhering water and destroys all organisms. The following day the walls are washed down. This remains effective for several years. If this is not practical in cases where basements are used for storage of articles that may be damaged by this process, the use of any of the fungicidal sprays recommended for the control of mold may be substituted although repeated sprayings are necessary. Para-formaldehyde, at the rate of 4 oz. per 100 cu. ft., set out in non-metal containers and not more than one pound per container, is also to be recommended. Not only will it prevent mold growth, but the residence in the area of all manner of creeping things. Moths are attracted to the fumes like flies to manure.

Mattresses, overstuffed furniture, etc. that become heavily infested with these hell sent little beasts may be drenched with carbon tetrachloride. Rugs may also receive a similar treatment.

Now let's go upstairs to the living quarters. D.D.T. sprayed along the basemold and around door and window framework and under and along the edges of rugs may afford suitable control. In clothes closets paraformaldehyde at the rate of 3 oz. per 100 cubic ft. is again indicated. Containers should be placed up high on the shelf and never on the floors. If no shelves are present use trioxymethalene No. 4 mesh at the rate of 2 oz. per 100 cu. ft. put into empty cigarette tobacco bags or some similar cloth container and hung on a clothes hook or tacked to the wall or door. Closet doors must be kept closed for it to be effective. This is especially recommended for mildew problems. Homes that are closed up for the summer or winter can be kept free of insects and mold in the same manner. Bedroom and living room walls, if these rooms are in constant use, may be sprayed with the aforementioned fungicidal sprays. Book cases having doors may also receive the paraformaldehyde treatment. Cereals, flour, and similar foodstuffs becoming infested should be burned. Lime dusted around the outside of the building may tend to discourage the crawling varieties from entering. Centipedes, likewise, do not relish this lime treatment.

Michel J. Guion

President
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ISOTOX Dairy Spray and ISOTOX Wettable No. 250... wettable powders for water dilution. Contain wetting, spreading agents. Finely ground, mixes readily, stays in suspension	25% Lindane Formulation	Flies, ants, roaches in *dairy* and livestock barns, creameries, milk sheds and milk processing plants. Certain pests on dairy and beef cattle, hogs, horses, sheep. Many plant pests	1-lb. can 4-lb. can 20-lb. pail	12 4
ISOTOX Liquid Dairy Spray... water dilution	20% Lindane Formulation	Same *dairy* insect control as above	4-oz. bot. Pint bot. 1-gal. bot. 5-gal. drum	24 12 4
PEST-B-GON Spray... water dilution	25% DDT Concentrate	Residual spray for barns and other buildings: flies, fleas, mosquitoes; also such plant pests as thrips, caterpillars, beetles, leafhoppers	1 gal. can 5 gal. drum 50-gal. drum	4
PERSISTO Wettable... water dilution	50% DDT	Same as PEST-B-GON Spray above. Also livestock pests: lice, hornflies and certain other flies on cattle; sheep ticks on sheep; flies and lice on hogs	4-lb. bag 6-lb. bag 50-lb. bag	12 8
ORTHO-KLOR Sprays... use undiluted or with water depending on formulation	Chlordane	Ants, grasshoppers, crickets, thrips, certain others	1-gal. 5-gal. 50-gal.	4
ALLTOX Sprays... water dilution	Toxaphene	Ants, flies, aphis, grasshoppers, crickets, red spider mites	1-gal. bot. 5-gal. drum 50-gal. non-returnable steel drum	4
ANT-B-GON Ant Poison... for use in many types of feeders. (West Coast only)	0.2% Sodium Arsenite plus sweetening material	Argentine and sweets-eating ants	30-gal. returnable drum	
TERMCO Wood Guard... use undiluted for uses other than weed control. (West Coast only)	0.1% lindane, 2.0% DDT, 4.4% pentachlorophenol, 0.6% other chlorophenols, 90% petroleum oils	Wood and soil termites, wood-boring beetles, wood-rotting fungus; weeds along fence rows, driveways, walks, etc.	5-gal. drum 50 gal. returnable steel drum	

ORTHO Weed Control... { WEED-B-GON 64 (Amine 2,4-D), ESTERCIDE 330 (Ester 2,4-D), ESTERCIDE T-2 and ESTERCIDE-T 245 (Esters of 2,4,5-T), TRIOX (Arsenical Weed Killer, Soil Sterilizer).

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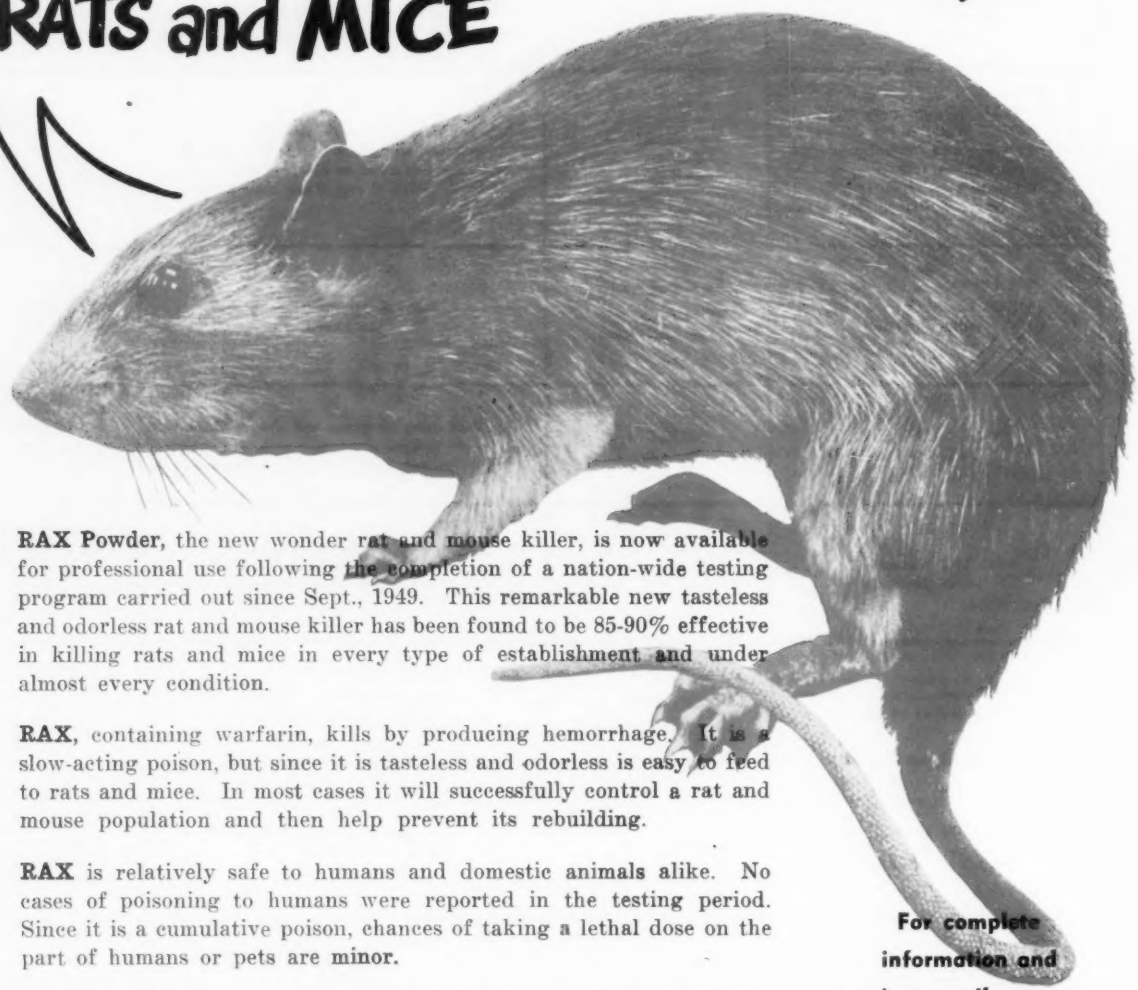

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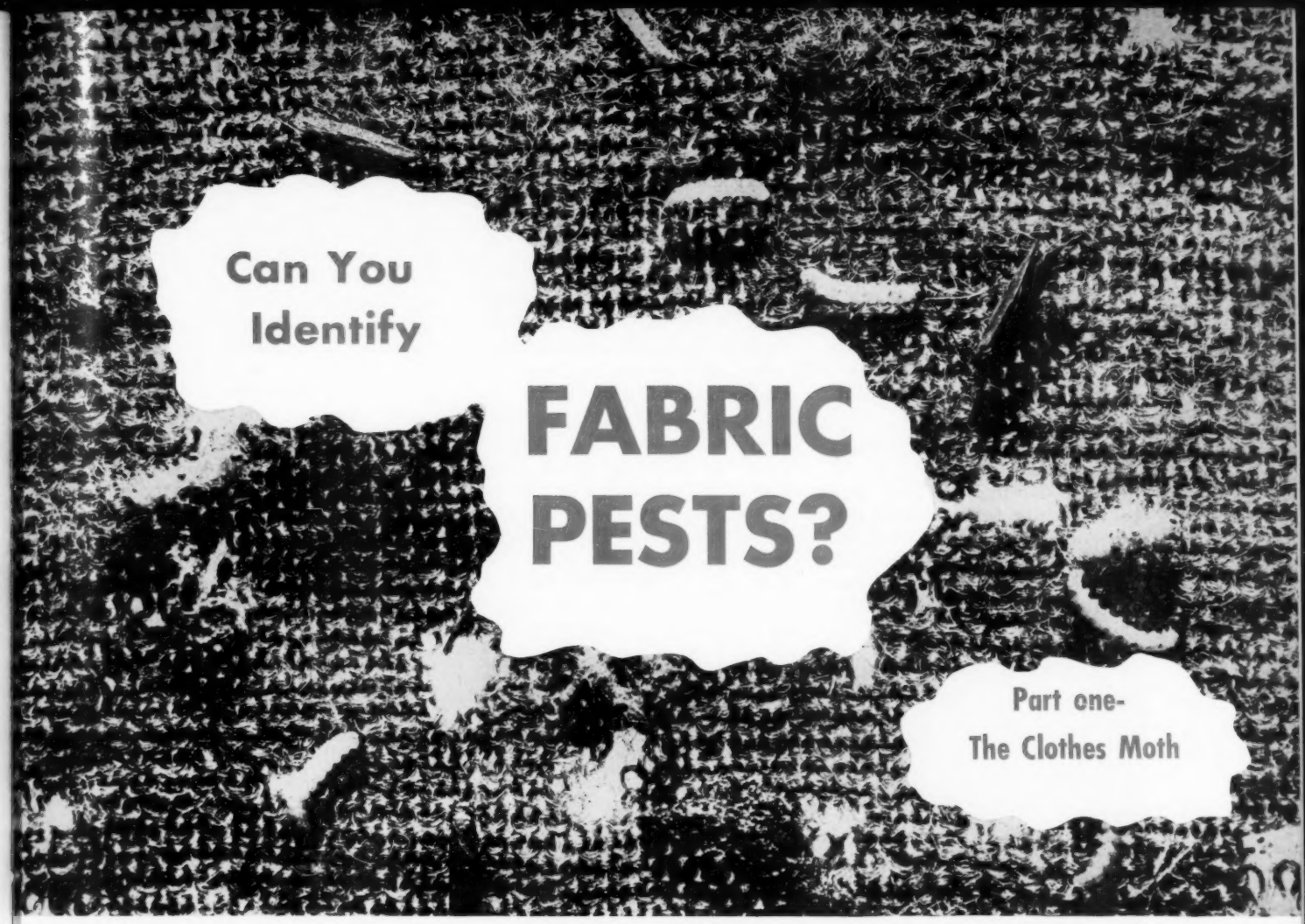


Can You Identify FABRIC PESTS?

Part one- The Clothes Moth

Photo Courtesy Illinois Natural History Survey

by

DOUGLASS BURNETT, Jr.

Theodore Meyer Estate
Philadelphia, Pa.

THERE are three important species of the Order Lepidoptera (butterflies and moths) which damage fabrics; especially those fabrics which contain parts of animals, such as wool. These are: 1. *Tineola bisselliella* (Hummel), commonly called the "Webbing Clothes Moth" or "Naked Clothes Moth," 2. *Tinea pellionella* (Linne), the "Case Making Clothes Moth" or the "Case Bearing Clothes Moth" and 3. *Trichophaga tapetzella* (Linne), the "Tapestry Moth" or the "White Tipped Moth".

Webbing Clothes Moths

Of the three, the Webbing Clothes Moth is probably the most common. All three are distributed generally throughout the world.

The Family Tineidae is described as follows: The head is usually clothed with erect hair-like scales, and antennae are shorter than the front wings. The maxillae are usually small or vestigial with the maxillary palpi usually large and folded, and the labial palpi short and clothed with bristles or with the first segment enlarged. There are more than 125 species in North America, and 50 of these belong to the genus Tinea. Most of the species of this family feed on fungi or are scavengers, or feed on wool. Few, if any, feed on leaves.

From this description, taken from Comstock, we are given two important clews: first, that "the head is usually clothed with erect hair-like scales", and second, the foods usually eaten. Clothes moths can be readily recognized by the topknot on their head. The damage done by larvae is usually on fabrics containing animal matter.

Some confusion sometimes exists between the cereal moths and the clothes moths. In the descriptions below, I have included the descriptions of three cereal moths for comparison.

Webbing Clothes Moth. Wingspread of 7/16" to 9/16"; plain cream colored wings and deeper buff head wholly clothed with radiating bristles.

Case Making Clothes Moth. Wingspread of 7/16" to 11/16". The adult is a small, silky, brown moth with three dark spots on each forewing.

Tapestry Moth. Wingspread from ½" to 1". The forewings are black from the base to near the middle, and white beyond. Hence the other common name the "White Tipped Moth".

Angoumois Grain Moth. A delicate moth of a buff color with a wingspread of ½" to 2/3". The hind wings are uniformly gray, with a *heavy* fringe of hairs which are longer than the width of the membrane. The hind wing mem-

brane (the solid part) is prolonged at the outside angle like a thumb or finger. *Sitotroga cerealella.*

Mediterranean Flour Moth. The adult moth is of a pale gray color and is from ¼" to ½" long. The head and tail are slightly raised when the insect is resting, this being very characteristic. The wings are marked with two zigzag lines of black which are not prominent. *Ephestia kuehniella* (Zeller).

Indian Meal Moth. The adult moth is about ½" to ¾" from tip to tip of wings. When at rest the wings are folded closely together along the line of the body and the antennae lie flat on the wings. The front or base of the forewings is a grayish-white color, and the tip half or two-thirds, as well as the head and thorax, a contrasting reddish-brown. The underwings are grayish white. *Plodia interpunctella* (Hub.)

Adult Webbing Clothes Moth

Difference Between Moths

The main difference between these six moths follow: 1. Both the Angoumois Grain Moth and the Webbing Clothes Moth are buff colored. However, the former has a heavy fringe on the backside of the hindwings, and the membrane of the hind wing is pointed at the upper and outer angle, so it gives the appearance of an outstretched finger. Further, the Webbing Clothes Moth has a heavily tufted head. 2. The Case Making Clothes Moth has three dark spots on each forewing. None of the grain moths have similar markings. The Mediterranean Flour Moth has the zigzag lines on the front wings as well as being swaybacked in appearance. 3. The Indian Meal Moth's forewings are darker on the outer half, whereas the dark area on the Tapestry Moth's wings is on the inner half.

There are, of course, many other differences, but none so readily seen as these.

The larvae of the moths have what are known as 'prolegs'. These are swellings on the under part of the abdomen and are used as feet to carry along the hind end of the body. These prolegs have hooks, or "crochets" on them. The larvae of the Lepidoptera are the only ones which have this combination. Usually these prolegs are in several pairs, and are found from the second to the seventh segments of the abdomen.

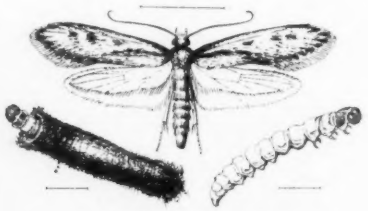
The matter of distinguishing between the larvae of the three species of clothes moths is simple when the silk spun by them is examined. The common names are the clew to their identity. The Webbing Clothes Moth leaves behind a silk strand as it crawls over the fabric. By constantly moving, these strands cross and recross, and so form a web. The Case Making Clothes Moth spins a case in which it lives; its head and some legs sticking out to feed and propel itself. The Tapestry Moth spins a continuous tunnel as it feeds and crawls. Another name for this insect is the "Tube Building Clothes Moth". It is more commonly known by the name "Tapestry Moth" because it usually attacks the harder yarns used in tapestries and some rugs.

The larvae of all three species are long, slender and whitish. They are about 1/16" long at hatching, and about 1/3" long when fully developed.

Since the adults do not feed, their mouthparts being useless, all the damage done by these moths is caused by the larvae.

What Larvae Feed On

The larvae have been known to feed on wool, hair, feathers (another form of hair), upholstered furniture, dead insects, dry dead animals, animal and fish meals, milk powders, and nearly all animal products. such as bristles, dried hair and leather.



Case Making Clothes Moth

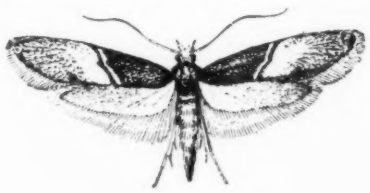
As examples for the varied products attacked, the Webbing Clothes Moth has been found feeding on furs, blankets, draperies, rugs, carpets, mohair, felt hats, baby clothes, bedroom slippers, piano felts, camel's hair brushes, toy animals and feather dusters. In nature, the larvae of these insects are scavengers, and so in civilization they have simply followed the parts of the animal to the manufactured articles. Strangely, the larvae of the moths have been found attacking nylon, dried cereals and grains; such as dried sweet corn, bruised oats, barley and patent flour.

Brues, "Insect Dietary" sums up the food habits of clothes moths nicely, (p. 202). "The clothes moths and some of their relatives are typical scavengers. Their food is of animal origin and contains a considerable quantity of keratin, a material not ordinarily entering into the diet of insects. Keratin is present in hair, fur, wool, feathers and horn, so when the moths start to work on

your best suit, you may be sure that some of these materials are included in its make-up. They will eat silk too, an entirely different substance composed of amino acids with varying amounts of other materials. They balk at cotton, and artificial silk is impossible, as this, like cotton, is cellulose, which insects cannot ordinarily digest. Careful studies have been made of the food-habits of the common clothes moth, *Tinea biselliella*, especially by Titschak, which indicate that Keratin is digested by the caterpillars."

Clothes moths, in both the larval and adult stage shun light, being negatively phototropic. To discover them the dark places must be examined. Thus they will prefer the inside of a suit, or the

Pictures on pages 10 and 11 courtesy Bureau of Entomology & Plant Quarantine



Tapestry Moth

area under the collar or between two suits hanging together in a closet. When put on a piece of cloth and it is held up to the light, they will crawl to the darkest side. Home insulation, made of cattle hair, piano felts, lint caught in the outlet of a hot air furnace or in the crack under a baseboard, the inside of carpet sweepers and vacuum sweeper bags, as well as the old sweater hanging inside the cellar door are all excellent harborages and sources of infestation which will spread through the entire house or store. Very often the flight of the adult is short, and the place where the mature insects are seen should be noted and the surrounding area or room examined carefully, because by so doing, the source will usually be found close by, thus saving much time in futile hunting where there are no moths. Usually this source will be a part of the rug seldom walked upon, or a piece of furniture seldom used.

Life History

THE life history of the clothes moths is similar to all Lepidoptera. The metamorphosis is complete; there being an egg, larval (caterpillar), pupal (cocoon) and adult stage. The eggs are laid on the larval food, each female laying from 50 to 150 eggs, sometimes singly, and sometimes in clusters. They are small, being about 1/50″ long, oval, and white. Incidentally, the clusters of tiny white balls usually found entangled in the silk spun by the caterpillars are feces and not eggs, as is commonly supposed.

The rate of growth of the larva is dependent upon temperature and food. Much work has been done by G. H. Griswold on the biology of the Webbing Clothes Moth. The data she gives on this species is representative.

Adult Clothes Moth

Larva, Webbing Clothes Moth

The egg hatches from 7 to 10 days at room temperature. When the temperature is dropped to 55 degrees F. the time of hatching increases to about 37 days. When the temperature increases to 85 degrees F. the hatching time is only 5 days. She noted that the eggs of the Webbing Clothes Moth failed to hatch if the temperature rose above 92 degrees F. or was less than 55 degrees F. The figures for the temperatures at which the eggs failed to hatch, in the case of the Tapestry Moth and the Case Making Moth, were not available. However, if they turn out to be about the same as the Webbing Clothes Moth, it would seem that a good, hot attic would be an excellent place to store the family woolens.

The length of time necessary for the development of larvae is dependent upon temperature, humidity and the food available. At a temperature of 75 degrees, a relative humidity of 75% and an adequate supply of food, the period from egg to adult is about fifty days. With an egg stage of seven days, and a pupal period of twelve days, the larval period is then about thirty-one days. Under adverse conditions, some larvae have been known to take as long as 780 days to develop. And, it is interesting to note, that the longer the larval period, the greater number of moults the caterpillar undergoes.

Under good conditions, a generation may be produced in less than two months. Thus, in a well-heated house, there can be as many as five or six generations a year.

Pupation, or the cocoon stage, takes place in a silken cocoon, which is generally true of all moths. Upon emergence, the adult is ready to mate, which can take place immediately. and the female can lay viable eggs twenty-four hours later.

The adult span of life is variable, depending on temperature, humidity, whether the larva had an adequate food supply, and whether the adult has mated or not. At room temperatures, 30 days is probably the usual adult life span. To generalize, it can be said that the total life of a

(Continued on page 18)

Trends in the Use of Insecticides in the Food Processing Industry

by

CHARLES A. CLARK, B. S.

Staff Assistant for Sanitation

General Foods Corporation

CONSIDERABLE amounts of insecticides and fumigants for the control of insects are used in the food manufacturing business. The use of these materials is necessary to insure the production of foods which will be free from contamination and meet the requirements of the Federal Food and Drug Law. Since the end of the war, this law has been enforced with increasing strictness.

The Federal Food, Drug, and Cosmetic Act as passed in 1938, includes a section which provides that "A food shall be deemed to be adulterated * * *

> If it consists in whole or in part of any filthy, putrid, or decomposed substance (402-a-3);
>
> If it has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth" (402-a-4).

Even a cursory examination of any issue of Notices of Judgment under the Federal Food, Drug, and Cosmetic Act will show a very large percentage of all seizures of food products are made on the basis that "the product consisted in whole or in part of a filthy substance by reason of the presence of insects or insect fragments".

Many people are only now beginning to realize fully that the Food Section of the Federal Act is basically a filth control measure. You will encounter many people who do not realize this fact. The law does, of course, have definite public health significance also, but this is almost incidental. The American public has long since come to accept food products manufactured in our great food processing factories as entirely safe. This confidence is built on experience and is fully justified. The esthetic consideration has long surpassed the health aspects in food control. For instance, with the exception of house flies, most of the insect pests that are a concern of a food manufacturer are an esthetic rather than a health hazard.

We believe that strict maintenance of high level sanitation is the basic requirement to meet rapidly raising esthetic standards. However, special attention has been centered on the prevention of insect infestations. This has required the increasing use of insecticides in and around food processing plants. While every effort is made to keep insects out by screening where necessary, by careful examination of incoming raw materials, by elimination of reuse of containers, by better design of equipment and many other means, the use of insecticides and fumigants is still necessary

A well rounded program of insect control which includes, but is not limited to, the proper use of insecticides and fumigants has shown that it is possible to maintain food plants relatively free of insect infestation. This is true even of very large plants handling thousands of tons of food products susceptible to insect infestation.

I hope I have made the point clear that satisfactory control of insects is not and cannot be obtained from the use of insecticides alone.

Since it is the use of insecticides which is of interest to this group, we will concentrate our attention on this part of the insect control job. It is convenient to divide the subject into three parts: (1) Insecticide Materials, (2) Methods of Application, and (3) Safety Factors.

Insecticide Materials

In considering this subject, I would like to emphasize the following points:

1. This outline of trends pertains to *food manufactiring or processing* plants only and may or may not parallel the trends in the agricultural end of the food business.
2. Trends of insecticide use in food processing plants may not parallel insecticide manufacturing statistics. For example, the use of a particular insecticide may be declining in food manufacturing but increasing in the agricultural field. The large use in the latter field would mask the effect of the decline in the branch of the food industry we are considering.
3. An attempt has been made to check the conclusions reached by contacting representatives of large food processors located in various parts of the country. Information from such groups as meat packers, dairy industries, canners, quick frozen food processors, flour and grain mills, cereals manufacturers, fish packing plants, etc. has been assembled.
4. Since this is an attempt at a cross-section survey, it does not necessarily represent the opinion of your speaker or the practice of the firm he represents.

Parathion: Not recommended for use in food plants (or inside any buildings) because of the health hazard.

Compound 497 (dieldrin): It is too early to predict the place of this material in food processing plant insect control programs. Indeed, it may turn out to have no place in food plants. In our own plants, we will not even test the material since that job can be done in other than food processing plants.

Methoxychlor: There has been a greater use of this material around food plants, especially dairy plants for fly control. However, the results have not been entirely satisfactory in every case and while methoxychlor will continue to be used, the food industry

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Chlordane: The trend has been strongly upward and may continue in that direction for a time. The material has proved satisfactory for cockroach and ant control. It has almost completely replaced the powders and pastes previously used. This insecticide probably has a permanent place for these uses in food processing plants.

DDT: The trend has been strongly downward because of: 1. Recovery of DDT in milk; 2. Widespread failure to give satisfactory control of houseflies because of build-up of fly resistant strains; 3. Only fair results against cockroaches; 4. Additional information on toxicity, particularly chronic toxicity; and 5. Competition of other insecticides, particularly chlordane and methoxychlor.

With the substitution of other insecticides for DDT in dairy plants, and the use of chlordane for cockroach and ant control, the downward trend of DDT use in food processing plants has leveled off.

Benzene Hexachloride: An actual hazard for use in the food processing industry because of the odor characteristic.

Lindane: The only "trend" in the food processing industry with regard to this material is an increased interest.

A special comment may be in order here. Lindane has a chance of coming into the picture for use by food processors if the insecticide manufacturers keep the purity up to standard and if the odor hazard proves to have been completely eliminated. At present, the food processing industry is doing a little experimental testing of the material, for use in food processing plants, railroad cars. etc.

A warning is in order. A single important case of food contamination due to a lot or batch of Lindane which is below standard will almost surely result in the virtual complete elimination of the material from consideration for use by food processors.

Pyrethrum: There is a trend back to the use of pyrethrum formulations because of the safety advantage of this material. The cost factor and relatively limited production capacity will prevent this valuable insecticide from filling more than a fraction of the total insecticide needs. Similar synthetic materials are receiving close attention.

General Foods sanitarians at one of the company's annual conferences

Pyrethrum-Activator Mixtures: These materials have come into more and more use and the trend is up but it appears that the leveling off stage is about here.

Fumigants: Ethylene dibromide mixtures, acrylonitrile formulations and similar spot fumigants are being used in greater quantities and the trend is upward.

Methyl bromide is gaining in popularity in relation to cyanide but the combined total use of these space fumigants has decreased. This trend has about ended and present use should remain fairly steady.

Methods of Applications

Use of dusts: There was a slight trend toward the use of DDT dust for control of mice in 1949. This has not developed into a regular practice and the present trend is away from the use of any insecticides in dust form in food processing plants.

Fogs, mists, smokes, etc: There was, in 1949, a very decided but short-lived trend toward the use of so-called "fogs". The present trend in the food processing industry is strongly against this type of insecticide application.

"Aerosols": With regard to the use of gas propelled aerosols, there is a slight trend to use commercial size "bombs" for emergency purposes under certain conditions such as in warehouse areas where food materials are properly protected. Other types of aerosol dispensers are getting some use, but in general the trend is away from routine use of this type of insecticide application in food processing plants.

Liquid sprays of contact and residual insecticides: The trend has been strongly upward in the use of insecticides in spray form directed to those surfaces and parts of buildings where insects live, hibernate, rest or hide, except, of course, where there is danger of contamination of raw food materials, food in process, finished goods, or on equipment with which food comes in direct contact. It is immaterial whether the insecticide is applied as a course, wet spray (not a mist, and directed at a surface, not into space) or painted on with a brush or other means.

Safety Considerations

The trend in the use of insecticides in food processing plants is very definitely in the direction of increased attention to the safety factor meaning the proper application of the correct materials at the right time and recommended

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amounts. This has been brought about by the directives, statements and warnings by company and association sanitation directors, government agencies, medical association discussions and other means.

The trend in the food industry is to give more and more consideration to *the insecticide products* used. This is true especially of new products. Increasing attention is also being given to the *method of application* or *how* the material is used. Much additional work is being done on testing for residues. Methods of washing which will result in the removal of insecticides are being studied. These are evidences of the strong modern trend of the food industry toward self-policing in the American way. It applies in the field of chemical specialties, including insecticides, as well as along general sanitation and other lines.

I believe this trend toward more industry self-policing is true in the insecticide manufacturing field also.

I was impressed by the remarks of Earnest Hart, President of National Agricultural Chemicals Association as published in N.A.C. News. Some of his recommendations were:

1. Strict enforcement of quality control in manufacturing; 2. Continuation of research and publication of the results on all pertinent matters; 3. Delay merchandising of new materials until adequate technical information is available; 4. Train field men carefully; 5. Follow carefully all regulatory edicts, print full directions and warnings; and 6. Participate in and support fully all policy programs and insist that full information be at all times available to all field contact men, including salesmen.

I can think of no better way of ending this article than to urge you to continue along a similar path. If you do this job effectively, the use of insecticides by food processors will continue on a substantial basis. This will be to the benefit of the insecticide industry, the food processor, and the American public.

PATENTS

RELATING TO PEST CONTROL

BY

DR. R. C. ROARK

U. S. Department of Agriculture

Copies of all patents can be obtained for 25 cents (no postage) sent to the Patent Office, Washington. D. C. In ordering a copy of a patent the number of the patent, the date, the name of the patentee, and the subject of the invention should be stated.

2,490,202 (Dec. 6, 1949; appl. June 18, 1947). **INSECTICIDAL COMPOSITION** COMPRISING A POLYCHLORO BRANCHED - CHAIN HYDROCARBON. George Allen Buntin, Wilmington, Del. — Hercules Powder Company, Wilmington, Del. —The patentee claims an insecticidal composition comprising a polychloro-2, 2-dimethylbutane, containing from about 65% to about 75% of chlorine, and a diluent.

2,490,498 (Dec. 6, 1949; appl. Nov. 17, 1945). **FLY KILLER.** Gust Wisen, Saltsburg, Pa.—Fred Wisen, Clarksburg, Pa.—This invention provides a revolving drum adapted to carry flies into a trap and then crush them.

2,490,924 (Dec. 13, 1949; appl. July 18, 1947). **STABILIZED ROSIN AMINE PEST CONTROL COMPOSITION.** Glenwood L. Schertz, Wilmington, Del. — Hercules Powder Company, Wilmington, Del. — The patentee claims a pest control composition in the form of a dust comprising a compound of the group consisting of a stabilized rosin amine and the co-ordinate covalent salts thereof admixed with a substantial amount of a material of the group consisting of pyrophyllite, bentonite, and kieselguhr.

2,491,414 (Dec. 13, 1949; appl. Feb. 10, 1945.) COMPOSITIONS OF 2,2-DI - (HALOPHENYL) - 1. 1. 1. - TRICHLORO - ETHANES AND 2,4-DINITRO - PHENOL COMPOUNDS. George E. Lynn and Curtis E. Dieter, Midland, Mich.—The Dow Chemical Company, Midland, Mich. — The patentees claim an aqueous spray composition comprises as an active toxicant at least 0.001 percent by weight of a mixture of DDT with 2,4-dinitro-6-cyclohexyl - phenol, and wherein the mixture of toxicants exerts a synergistic effect as regards insecticidal toxicity.

2,491,555 (Dec. 20, 1949; appl. June 1, 1945.) **WINDOW SCREEN.** Stephen Fistor, Battle Creek, Mich.

2,491,632 (Dec. 20, 1949; appl. Sept. 9, 1944). METHODS OF PRODUCING INSECTICIDAL COMPOSITIONS CONTAINING RELATIVELY SMALL QUANTITIES OF 2,2-BIS(P-CHLOROPHENYL) — 1,1,1 — TRICHLORO-ETHANE. Ferd W. Wieder, Berkeley, Calif. — Stauffer Chemical Company—DDT vapor in a gas stream is condensed on powdered sulfur during the grinding process to yield a mixture containing about 0.25 percent of DDT.

2,492,650 (Dec. 27, 1949; appl. Sept. 8, 1944.) DOUBLE FLUORIDE OF SODIUM AND ALUMINUM AND PRODUCTION THEREOF. Daniel C. McLean, St. Louis, Mo., John E. Morrow, East St. Louis, Ill., and Jacob R. Fox, St. Louis, Mo. — Aluminum Company of America, Pittsburgh, Pa. —The patentees claim a free flowing, non-pelleting, dustible insecticide powder composed of sodium aluminum fluoride in originally precipitated form without further reduction in size, 90 percent of the particles of which are in size not greater than 10 microns and which have an average particle size between 2.5 and 4.5 microns.

2,493,107 (Jan. 3, 1950; appl. Aug. 29, 1947). **RAT GUARD.** Ean Lee Bush, San Francisco, Calif. — This guard prevents the passing of rats or insects along a hawser.

2,493,209 (Jan. 3, 1950; appl. Jan. 25, 1949). **SPRAY OR ATOMIZER NOZZLE.** Frank A. Simmons, Elgin, Ill. —Burgess Battery Company, Lake Zurich, Ill.

2,493,723 (Jan. 3, 1950; appl. Aug. 6, 1945). **POWDER DISTRIBUTOR.** George E. Lynn, Midland, Mich.— The Dow Chemical Company, Midland, Mich. — This hand-duster is adapted to be employed for the application of insecticidal, germicidal, and fungicidal dusts.

2,494,837 (Jan. 17, 1950; appl. Feb. 26, 1948). **SPRAYER OR ATOMIZER.** Frank A. Simmons, Elgin, Ill.—Burgess Battery Company, Lake Zurich, Ill.

2,495,366 (Jan. 24, 1950; appl. Jan. 31, 1948). **INSECT EXTERMINATING DEVICE.** William M. Edmonstone, Hyde Park, Mass.—Clothes moths are attracted to a felt pad impregnated with grease and the larvae that develop therein are crushed by this device of the door operated type.

2,495,367 (Jan. 24, 1950; appl. June 15,1948). **INSECT EXTERMINATING DEVICE.** William M. Edmonstone, Hyde Park, Mass.—Clothes moth larvae developing in grease impregnated felt are crushed by stepping on the cover of this device.

2,496,270 (Feb. 7, 1950; appl. Feb. 9, 1946). **SKIN DRESSINGS WITH FUGITIVE COLORS.** Myron A. Coler, New York, N. Y.—Synergistics, Inc., New York, N. Y.—An insect repellent contains 2-ethylhexanediol-1,3, phenolphthalein, glycerol, ethanol and sodium carbonate. Within a few minutes after application to the skin the color has disappeared.

2,496,364 (Feb. 7, 1950; appl. Aug. 21, 1946). 3 - SULFANILAMIDO-BENZOTRIAZINES - 1, 2, 4 AND METHOD FOR THEIR PREPARATION. Frank J. Wolf, Westfield, and Karl Pfister III, Summit, N. J. — Merck & Co., Inc., Rahway, N. J.

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- Gnats
- Mosquitoes
- Wasps
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- Clover mites
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- Rust red beetles
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- Rice weevils
- Saw-toothed grain beetles
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- Angoumois grain beetles
- Mediterranean flour moths
- Meal worms
- Cigarette beetles
- Drugstore beetles
- Grain mites

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Fabric Pests

(from page 11)

clothes moth, from the time the egg is laid, is about 80 days.

Methods of Control

There are many methods of control. Fumigation, spraying, low temperatures, proper storage and repellents.

Fumigation has long been used as a method of eradication. Cedar chests and cedar closets have little or no practical value. Paradichlorobenzene has been used successfully for decades as a 'home remedy' and will be effective if enough is used; the crystals placed high in the closet or clothes container (because the fumes are heavier than air and will not rise) and the closet or container is well sealed. The usual fumigants used by the pest control operator will kill clothes moths in all stages, including the egg.

The number of insecticides on the market is rapidly increasing, so it is impossible to give in detail the proper dosages and uses of each. The residual sprays, such as chlordane, lindane, DDT and others can and will give good control for many months. It is best to ask the manufacturer for his recommendations relative to percentages and milligrams per square foot to be applied, and other pertinent data. Aerosols and space sprays can be used to eliminate a present infestation, and residual sprays for long protection.

No spray is of any value if it is not put into the places where the insects can contact it, and this article is an attempt to help find those places.

The use of low temperatures for the protection of fabrics and furs are common, and highly effective.

W. J. Holland's "The Moth Book," published in 1905, suggests that garments cleaned in such a manner that no female moths or moth eggs are present, put in paper bags and the seams sealed with tough paper, will be protected from moths indefinitely. This method is as effective as cold storage if the bags are sealed completely. A female moth can wiggle through an unbelievably small crack, but she will not lay her eggs on the bag, nor will the larvae bore through the paper to get to the fabrics inside.

And lastly, the question of repellents, or "moth proofing". It must be remembered that repellents do not kill, so a present infestation should be destroyed before the repellent is applied, or the insects might eat through the repellent if hungry enough or if a small area was missed in the application of the repellent. Repellents then are more of an insurance against future infestation rather than solving the problem of a present one.

(To be continued in December)

What They're Doing IN RESEARCH

By Kollum Roole

USDA has found a new insecticide can be extracted from the roots of a common native perennial weed. The discovery of this potent new insecticidal chemical, an amide called **scabrin,** was made by Martin Jacobson, an insecticide chemist employed on a project under the Research and Marketing Act of 1946.

Early experimental trials with the new insecticide, derived by extracting the active principal from plants of the genus Heliopsis (commonly known as ox-eye), showed it to be appreciably more toxic to houseflies than pyrethrum, which is the standard of comparison in laboratory tests.

Aside from chemical properties, the insecticidal toxicity of the new material is the only biological fact known about it so far. How difficult it may be to obtain from the natural weed source, and manufacture it commercially, is not yet known. The effect of the chemical on insects other than the housefly, or what it does to man or animals, plants or soils, are subjects still to be explored.

There are a number of species of Heliopsis in this country, all native to the United States. Three of them have been tested for insecticidal activity so far. Extracts of leaves, stems, bark and roots, have been made. The extracts from the roots of one of the species, scabra, appear to contain the most powerful of the insecticides.

Plants of scabra are grown on dry soils and along river banks from Main to British Columbia and New Mexico. They are hardy herbaceous weeds from 2½ to 4½ feet tall, that are related to the sunflowers, Helianthus. The flowers produced in fall months are very attractive and plants are not cultivated for this reason.

The insecticidal properties of pyrethrum are contained in the flowers. But economics of pyrethrum growing prohibit its commercial production in the United States because a great deal of hand labor is involved. A root crop, however, may lend itself to mechanical tillage and harvesting. American farmers might be able to produce such a crop profitably, if the insecticidal properties of the crop would compete favorably with the desirable pyrethrum.

Ryania is a new botanical insecticide from South America now being collected, imported and prepared as an insecticide by S. B. Penick & Co. So far Ryania has proved of value only in the control of European corn borers and other agricultural insects, but its unique properties of being able to control these pests without leaving poisonous residues and without being hazardous to field men spraying or dusting crops, may find a use for it in the structural pest control field.

NPCA Technical Director, Dr. Ralph E. Heal, did much of the original research on Ryania when he was with Merck & Co. Ryania is a tropical American genus of shrubs and small trees belonging to the family Flacourtiaceae, the principal source of the insecticide being the stem of wood of Ryania speciosa, a specie native to Trinidad.

Ryania was discovered in the course of a cooperative research program by the Research Laboratories of Merck & Co., and the Department of Entomology of Rutgers University and the New Jersey Agricultural Experiment Station. Penick was licensed to merchandise the insecticide and to continue with research activities. An attractive 16-page booklet on Ryania, fully describing its insecticidal properties, will be sent if you write S. B. Penick & Co., 50 Church St., New York 7, New York.

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Camera Catches Jovial Convention Air

Top Row, Left: Tom Mahon, William O. Buettner, Mrs. Buettner, Dr. Ralph E. Heal; **Top Row, Right:** (top row, left to right) Theodore Oser, Dr. H. K. Steckel, George R. Elliott, Bartlett W. Eldredge, Thomas C. Raley, F. E. Bohman, (bottom row) Harold E. Jennings, J. Harvey Sturgeon, C. Norman Dold, William O. Buettner (All NPCA past presidents except Mr. Bohman); **Middle Row, Left:** Convention chairmen—Robert C. Yeager, Mrs. William Q. (Vee) Phippard, Lee C. Truman; **Middle Row, Right:** (top row, left to right) Regional Vice Presidents — George Atchison, Charles W. Houghton, John K. Medoff, Herman L. Fellton, Arden W. Price, (bottom row) Martin T. Meyer, Walter B. Hill, Maurice Oser, Harlem B. Ives; **Bottom Row, Left:** Convention delegates revel at the closing dance; **Bottom Row, Right:** (beginning at top row, left to right) Members of NPCA Board of Directors—H. O. Abel, I. B. Carncross, Alva H. Bender, Reynold Shuyler, Kenneth C. Bell, Fred J. Bowers, Jacques J. Hess, Morton J. Levy, J. O. Millspaugh, Mark Weintraub, A. E. Ritt, Russell G. Clark, Herman C. Militzer, Harry E. Studier, Jack Rudick, Lee C. Truman.

J. Edwin Sameth Elected President by Largest Number NPCA Convention Delegates in 18 Years

Speakers Provide Many Answers to Business, Public Relations, Fly - Termite - Moth -Rodent Problems in Three - Day Cincinnati Meeting

IN ONE of the most spirited and enthusiastic NPCA election campaigns ever held, J. Edwin Sameth was finally unanimously elected its 1950-51 president by the 18th Annual National Pest Control Association Convention held October 22-25 at Cincinnati's Netherland Plaza hotel.

Mr. Sameth, past president New Jersey PCA and director of Western Exterminating Co., Inc., Newark, was the candidate named by the NPCA nominating committee made up of senior vice-presidents, but rousing campaign speeches for additional nominees both from members of the nominating committee and from the floor lent a true democratic fervor to the session

Total number of paid registrants for this year's meeting reached 525 not including exhibitors and special guests whose presence brought over-all attendance to more than 600, largest in NPCA cenvention history.

Avoid Dangerous Business Practices

This year's theme, "Business Is Like That," was sounded at the very first session of the convention held Monday morning in the Hall of Mirrors. Important papers, too, were given on fly control, termite control, the newer insecticides and on latest developments in rodent control by government experts from the U.S. Department of Agriculture, Fish and Wildlife Service, and Public Health Service.

In his talk, "This is Business," A. E. Ritt, NPCA director, Vogel-Ritt, Inc., Philadelphia, Pa., likened business to a fan belt of an automobile, which, if lacking would eventually cause engine failure. The progress of the world depends on business, he said. Without it, or with business that is not sturdy, people degenerate and become vicious. He urged PCOs to remember that they are selling an intangible called service. If effective service is rendered, the goal to make money will automatically be realized.

Mr. Ritt warned PCOs against falling into such dangerous business habits as selling service and merchandise without paying close attention to costs, giving cut-rate service, and overpricing. Arriving at a fair price requires knowledge of all of your costs, he stated. Cut rates lower the quality of service, may result in service accidents, bring no profit, and finally create dissatisfaction between the PCO and customer. Essential elements in a well conducted business, he listed, are: intestinal fortitude, stamina, the ability to say "no" to customers requesting special favors and the ability to demand a fair price for services.

The pest control industry must follow the times in order to stay in business, Ritt concluded. This means giving effective service and being fair to employees, customers, competitors and to yourself.

Continuing the business theme, Dr. Charles F. Schuller, assistant director, Bureau of Visual Instruction, University of Wisconsin in Madison, talked next and showed movies on "salesmanship." He defined salesmanship as the art of getting people to do what you want them to do by first attracting their attention, holding it and then convincing them of your sincerity so they will listen to your story. Knowing your products or possessing know-how in your field, plus the ability to create attention are necessary requirements for successful selling, he stated.

Dr. Schuller stressed the importance of good business letters. Their appearance and well-worded content sell your organization, he said. Next, he showed the movie, "Telephone Courtesy" which clearly demonstrated the importance of good telephone manners in the business world. Poor appearance of servicemen should be eliminated, he warned. Their uniforms or coveralls should look as if they had been thought of, not just worn by accident.

The speaker pointed out the inadvisability of arguing with customers because it results in lost sales. Another film was shown to illustrate this. He advised using the "yes, but" technique when presenting opposing opinions to a customer. Finally, Dr. Schuller warned against running down competitors in the sales talk. This only helps to fix the competitor's name in the customer's mind, he said.

Fly Control in '51

In spite of the fact that "everyone now appears to have accepted the development of insect resistance to insecticides . . . it seems doubtful if everyone recognizes . . . the seriousness of the situation." So stated Dr. Fred C. Bishopp, Assistant Chief, Bureau of Entomology & Plant Quarantine, USDA, before one of the three concurrent sessions held Monday afternoon. Many are still putting full dependence on insecticides to control flies which, under some conditions, have become so resistant it almost "takes a hammer to kill them," he said.

Observation of many field workers has revealed that not only do flies become resistant to an insecticide, they have also changed their habits and now tend to avoid sprayed surfaces by resting on the floor or outside on the grass, weeds and ground, instead of the ceiling and walls of a barn, Dr. Bishopp reported.

At first limited to a few sections of the country, Dr. Bishopp remarked that resistance had now become widespread in the USA and in other countries, too. It has been found that flies, exposed to two or more insecticides as resi-

dues, develop a resistance to most commonly used fly control chemicals. An effort to rid an Orlando, Fla., dairy barn of flies showed that DDT, methoxychlor, pyrethrum-piperonyl butoxide, and dieldrin failed to give appreciable control. Using the same insecticide, or another in the same class, against both larvae and adults will hasten the appearance of highly resistant strains.

Realizing the interest in new ways to combat the resistance problem, the BE&PQ authority said the situation has stimulated an interest in space sprays and methods of applying them. Pyrethrum plus piperonyl butoxide or other synergists and the new synthetic material, allethrin, used in sufficient quantities to kill all flies in buildings are strong favorites. "The synthetic organic thiocyanates Thanite and Lethane, applied in odorless kerosene also have a place in clearing flies out of buildings." Volatilizing lindane in fly infested rooms has been found effective.

Treated Fibreglas Filters

Another highly successful way found to kill certain insects, discovered by BE&PQ's W. H. Sullivan, is to pass an air stream through a Fibreglas filter previously treated with 15 to 100 grams of lindane. The glass fibers should be uniformly covered with lindane crystals and the filter then be placed before a 10 or 16 inch household fan.

Dr. Bishopp admitted that the government, as well as industry, was disappointed that clear-cut recommendations regarding the use of insecticides for fly control in 1951 cannot be made. Remembering that the control of this pest requires different techniques in various sections of the country, some 18 suggestions were offered which will help relieve the problem. Included among these recommendations was an emphasis on sanitation, especially adequate and prompt disposal of all fly-breeding materials and the installation of screens, fans, etc.; spray exteriors rather than interiors and strive to kill flies before they gain entrance to buildings; for outdoor spraying DDT, methoxychlor, lindane, BHC, toxaphene, or chlordane are usually employed; where vegetation may be struck use water dispersible materials; in dairy barns use lindane or methoxychlor as residual sprays applying them at the rate of 25 mg. and 200 mg. per square foot respectively using a .3 to .5% concentrate; start the fight against flies before they appear next spring by a general cleanup of breeding places.

Full cooperation of everyone is essential if our 1951 campaign against flies is to be a success, Dr. Bishopp concluded.

Coloring Warfarin Suggested

John C. Jones, Branch Predator and Rodent Control, US Fish & Wildlife Service, advised delegates that coloring of the rodenticide warfarin might be advisable to avoid mistaken identity by human beings. Mr. Jones gave the talk originally to be delivered by his chief, Walter W. Dykstra who just became the father of a new son.

Suitable coloring agents mentioned were: 4 oz. animal charcoal to 1 lb. warfarin; ½ oz. vegetable charcoal to 1lb. of bait; ½ to 1 gram soluble Red "0" to 20 lbs. warfarin; and 5% Lake green pigment to color warfarin powder.

To emphasize the importance of rodent control, Mr. Jones reported that tests in a sample city revealed 12.4% rat population and 21% mouse population. He said statistics indicate there are 100 rats per year per million population.

Warfarin is a slow acting rodenticide, which causes death by lung hemorrhage. Experience to date reveals material costs are about five cents per rat killed, Jones revealed. He said, even though warfarin has very low toxicity, it should not be placed where food or feed can be contaminated or where children or pets can contact it. Because of the small dosage required there is little chance of fatal accidents, but experiments have shown one pound of warfarin will kill a dog.

Comparing the effectiveness of warfarin in rat and mouse control, Jones said house mice may be more difficult to control because their limited travel range (Pest Control, August 1950, pg. 16) makes it difficult to eliminate the availability of food. It was suggested that a double dose of warfarin may give desired results. He said this rodenticide should not be used in a water base or as a tracking poison.

There is no bait shyness to warfarin as with some other rodenticides, acceptance depends on carrier. Prejudice to red squill may last up to one month; to antu, four months. Red squill, Jones said, also provides a possible danger to livestock and therefore should be used carefully. Use of 1080 has diminished, but it still has an important place in initial cleanup work. Jones reported no deaths attributable to 1080 have been reported so far this year.

A new rat repellent, actidione, a byproduct of streptomycin, has been found, in early experiments, to be effective in keeping rats away from cartons painted with the antibiotic. It has been reported that one ounce in 3,675 gals. of water will cause rats to refuse to drink it.

"The Role of Lindane in the Pest Control Field" was competently discussed by Dr. Carl Condron, California Spray-Chemical Corp., Haddenfield, N. J., who revealed the wide adaptability of this chemical in the control of insect pests. Tests also conducted to determine the effectiveness of lindane in termite work.

In his fair analysis, Dr. Condron cautioned operators to avoid excessive skin absorption and inhalation of the chemical as a safety precaution. He also pointed out that only the best of oil solvents should be used to obtain an effective formulation. A strong interest was shown in lindane and it is expected that this talk will be published more fully in the near future.

ARPs Approved

The final tentative draft of the Approved Reference Procedures for Subterranean Termite Control was presented for discussion before the termite group meeting Monday afternoon. Dr. Ralph E. Heal, NPCA technical director, assisted by F. J. Bowers, George

L. Hockenyos, J. L. Howell and R. B. Mesecher acted as a panel for discussion from the floor which culminated in final approval of this latest NPCA committee work setting up standards for subterranean termite control procedures. Seven "before and after" displays for various elements of construction had been built by Alva H. Bender, Washington, D. C., and were the basis for much interest in this session.

"Roadblocks" for Termites

"It is most important in the control of termites to set up 'roadblocks' or barriers between the wooden portions of a building and the ground." This was the opinion stated by Dr. Thomas E. Snyder, Senior Entomologist, Forest Insect Investigations, USDA; Beltsville, Md., who opened the termite session. Removal of stumps, wood and other cellulose debris, boards, grade stakes, etc. and providing thorough soil drainage and sufficient ventilation for foundations help to establish termite barriers.

Among the soil poisons that have proved effective in long time service, Dr. Snyder mentioned: 10% sodium arsenite in water, 1 part trichlorobenzene in 3 parts fuel oil, 5% DDT in fuel oil, and 1 part coal tar creosote in 2 parts fuel oil. Under normal conditions he said, no chemical can take the place of mechanical alterations. Dosages vary with the toxicity of the chemical, the character of the soil and the depth of the trench. Many of the newer soil poisons are being tested and some have shown promise, he reported. Surface applications of chlordane, as well as benzene hexachloride, are being tested for the control of dry-wood termites infesting exposed timbers in buildings.

It was a great disappointment, Dr. Snyder commented, that fogging tests conducted in cooperation with Todd Shipyards Corp. of New York and a local PCO failed to kill powder-post beetles infesting woodwork of buildings. Other experiments are being conducted in cooperation with Penn State College which seem to indicate powder-post beetles infesting the woodwork of buildings may be controlled by electronics through the production of heat in wood by radio frequencies. There are several problems yet to be solved, Dr. Snyder said.

Prospects—Customers—Training

Concurrent with the two previous sessions above were discussions given in the Hall of Mirrors on, "Prospects," by Stanley Lind, NPCA director, American Laboratories, Inc., Chicago, Ill.; "Customers — Where to Find Them and to Whom Do They Belong," by Kenneth W. Thompkins, Thompkins Exterminating Co., New York city; "How to Train Servicemen," by Herman L. Fellton, technical director, Orkin Exterminating Co., Atlanta, Ga., and "The PCO and Serviceman — Customer Relationships," by Dr. Lee C. Truman, National convention chairman, Pest Control Services, Inc., Indianapolis, Ind.

Speaking on prospects, Stanley Lind reminded PCOs that they were engaged in an important economic activity and that it was up to them to use honest means to find those who will benefit by their services. He mentioned four fundamentals for locating prospects: 1. keeping planned records of prospects; 2. getting to them first and with the strongest selling points; 3. meeting prospects under the most favorable conditions possible, such as social gatherings, church and civic functions; 4. never close the door on a prospect, keep friendly despite unfavorable occurences.

Mr. Lind also emphasized having a planned sales presentation which means being yourself, taking care not to create prejudices, giving a complete story, presenting that story in logical sequence, being dramatic yet honest and finally, attempting to minimize the impact of cost.

For finding customers Kenneth W. Thompkins stressed the importance of plain ordinary leg work, walking around town and making contacts. He also mentioned the value of using the telephone directory and of direct mail advertising. For deciding who owns a customer, Mr. Thompkins urged PCOs to follow the NPCA code of ethics.

The serviceman is the key to keeping customers, Herman Fellton declared in his talk on serviceman training. Servicemen go out on customer property, therefore must know what they're doing. He warned against assuming servicemen understand everything they're being taught and emphasized the need for demonstrating procedures and use of materials at training lectures. All servicemen don't understand alike and can easily fall into old habits when

"Talking it over" are (left to right) **Dr. R. K. Somers**, Meat Inspection Division, USDA, Washington; **Dr. Kenneth I. Milstead**, U. S. Food & Drug Administration, Cincinnati; **Charles A. Clark**, Staff Assistant for Sanitation, General Foods Corp., New York; **William B. Gresham, Jr.**, Secretary, Florida Pest Control Association.

Program speakers' huddle with (left to right) **Howard C. Merrill**, Branch Rodent & Predator Control, Fish & Wildlife Service, Boston, Mass.; **Dr. Fred C. Bishopp**, Assistant Chief, Bureau Entomology & Plant Quarantine, USDA, Washington; **Dr. Thomas E. Snyder**, Senior Entomologist, Forest Insect Investigations, BE&PQ, USDA, Beltsville, Md.; **John C. Jones**, Branch Rodent & Predator Control, Fish & Wildlife Service, Washington; **Professor J. J. Davis**, Chief in Entomology, Purdue University, Lafayette, Ind.

back on the job, he stated. It is important to check your men on the job, check their relationship with the customer, and check to see their equipment is kept in good working order.

Training, Mr. Fellton continued, must include the principles of safety. Know the dangers of the chemicals you use and make sure your servicemen know them, he advised.

Speaking on customer relations, Dr. Lee Truman pointed to the need for possessing the attitudes that make for good relationships. Tell the serviceman how important your company is, then have him go out and tell the customer, he said.

Dr. Truman urged PCOs to remember that the customer is interested only in what their service will do for him. Coordinate your sales and service departments, so the serviceman will be able to do what the salesman has told the customer will be done. Put sales and service on the same level in order to show the customer you have good relations in your own firm, he urged.

Dr. Truman concluded by stressing the importance of sending out neat appearing servicemen with clean looking equipment. Bringing battered or unpainted sprayers, tools or other materials into a customer's home will only serve to antagonize him.

Pavillon Caprice was the scene of Monday evening's annual reunion and informal get-together. In addition to having the opportunity to meet new acquaintances and renew old friendships the attending group saw two new sound films on the Norway and roof rats, recently released by the Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.

Delegates returned to the Hall of Mirrors Tuesday morning to hear important papers delivered by W. Moscrip Miller, President, Affiliated Public Relations Counsel, Inc., New York city; Dr. Fred C. Bishopp of the USDA; E. L. Newhall, Cincinnati & Suburban Bell Telephone Co.; and an ethics symposium conducted by Professor J. J. Davis, Chief in Entomology, Purdue University; Geo. C. Young, president, Better Business Bureau of Cincinnati; and Dr. H. K. Steckel, NPCA past president, Tornado Manufacturing Co., Columbus, Ohio.

PCOs Health, Sanitary Engineers

Speaking on the value of public relations to the pest control industry, W. Moscrip Miller declared that public relations begin with the men who do the actual labor. They are your working contact with your customer, he said. He advised giving servicemen a build-up to make them feel that they are doing an important and not a menial job.

The speaker pointed to the great lack of publicity about pest control work. Your workers are, in effect, public health or sanitary engineers, doing a terrifically important job that the public does not appreciate because it is done so well, he said. It is important to tell the public about pest control work through sound public relations. This will not only make the public aware of the importance of the industry's work, but will lay the ground work for more business, he stated.

Dr. Fred C. Bishopp, speaking on the safe use of insecticides, stressed the need for alertness to the hazards of these chemicals. PCOs have an important responsibility to meet in rendering service to the public, he said. "Your services are being sought for the control of insects that annoy or spread disease to man or his pets, contaminate or destroy his food, or damage his possessions," Dr. Bishopp stated. "As pest control operators you must not only be able to recognize and know how to control these formidable pests, but you must be able to accomplish the job without damaging property or endangering life."

The speaker went on to relate the hazards of various chemicals, discuss their antidotes and the legislation pertinent to their use. He closed his paper with a call to PCOs to make 1951 a year for the acquisition of more exact knowledge of pesticides by research and observation, and, "above all," he said, "let us make it a year free from accidents both among our operators and our clients."

Following Dr. Bishopp's talk, William O. Buettner rose to comment briefly on what had been said. He reminded listeners that the Association was watching closely the results of the residue tolerance hearings being held by the Food and Drug Administration because these talks were not confined to just the growing of fruits and vegetables. The industry, he said, should bear in mind that insecticides play a big part in all phases of the process of getting food from the farm to the consumer. His point was that it is necessary to be aware of insecticide hazards when treating food storage warehouses, food processing plants and transportation vehicles, as well as being mindful of their use on farms.

Our work is being watched for its effects on our own men, our customers and the buildings and commodities we treat, Buettner advised, and he urged full cooperation with the U.S. Public Health Service in preventing mishaps especially those affecting the industry's personnel.

After Mr. Buettner's comments, E. L. Newhall of the Cincinnati & Suburban Bell Telephone Co., showed a film called "A New Voice for Mr. X" re-emphasizing the necessity of correct and courteous telephone usage.

10-Point Ethics Formula

In the ethics symposium which concluded Tuesday morning's session, Professor J. J. Davis presented the following 10-point formula for practicing good business ethics: 1. Be honest, say "no" if necessary, sell yourself and your company and, at all times, maintain professional standards; 2. Do not indicate to the customer that more damage has been done than what is actually so; 3. Avoid over-selling; 4. Overcharging is bad business—ethical practices should be the guide; 5. Cost estimates should cover *everything* to permit the bill to be accurate, or even less than originally thought; 6. Maintain good public relations, prompt service and carry out contracts in workmanlike fashion; 7. Don't give the impression you know it all; 8. Respect client's ideas; 9. Maintain relations with client on a business-like basis; and 10. Support your association.

Dr. H. K. Steckel's remarks touched briefly on relationships

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between competitors. We find too little time to be friendly with our competitors, he said, and advised practicing the golden rule rather than the eye-for-an-eye practices that are still prevalent among many business rivals. Dr. Steckel warned that using "puff" or exagerated advertising would only irritate competitors. He stressed setting price with costs, and not the competitor, in mind, adding that customers seeking bids may color or distort the bids given by a competing firm in order to get as low a price as possible.

Speaking on better business bureaus, George C. Young made it clear that these organizations were more concerned with keeping up public confidence in business than breaking up illegal practices. People become concerned with pest infestations because of their ignorance, he said, and then urged PCOs to reassure such customers instead of frightening them. Operators can allay customer fears by handling the job correctly he suggested.

Mr. Young concluded by advising PCOs to be utterly frank with their clients, their problems, what they are going to do about them, and what they intended to charge. Finally, he said, convince yourself that you are on a professional basis.

Business Management

Delegates divided into two groups Tuesday afternoon to attend separate business management sessions concerning pest control firms with less than six servicemen and those hiring six or more men. At the former, the audience chose topics on which they wanted further study done during the year. Men chosen to head committees on each of these subjects are: Glenn H. Burnett, Pricing and Costs; John Anderson, Keeping Customers; Robert Berns, Advertising Copy; L. Underwood, Business Locations; and Simon Ratner, Selling PCO Services. George R. Elliott, NPCA past president of Ransford Pest Control Co., Worcester, Mass., was elected general chairman.

Eighty-six were represented in the group made up of operators employing six or more servicemen. No recommendations on policy were made but fields of study were decided upon and it is expected some work will have been begun so progress can be reported at the Purdue conference early next year. Eight topics will receive concerted attention by this group of larger companies. They are: 1. Salesmen training, incentive plans, and coordination of advertising and selling programs; 2. Serviceman selection and training and the use of training aids; 3. Cooperative industry advertising; 4. Office management and routine; 5. Public relations; 6. Selection and standardization of tools, equipment and chemicals; 7. Fleet car maintenance and cost of fleet car ownership vs. rental; and 8. Branch office management. It was decided that topics 1 and 3 would be investigated most thoroughly in the coming year.

Another part of the fine program arranged by local chairman Robert Yeager and his committee and Dr. Lee C. Truman, national chairman was the Buffet Supper held Tuesday evening in Pavillon Caprice.

Sanitation received due attention Wednesday morning with informative discussions presented by Charles A. Clark, Staff assistant for Sanitation, General Foods Corporation, New York city; Dr. R. K. Somers, Chief, Inspection Procedures Section, Meat Inspection Division, Bureau of Animal Industry, USDA; Dr. Kenneth L. Milstead, Chief, Cincinnati District, U. S. Food & Drug Administration; and, Bartlett W. Eldredge, NPCA past president, Waltham Chemical Co., Waltham, Mass.

Food Sanitation

Speaking on the "Place of the PCO in Food Industry Sanitation," Mr. Clark made his points by posing them as questions to the pest control industry. Have pest control leaders been guiding the industry along lines of service and not the aim of making a quick dollar? Have PCOs recognized the dire need of effective pest control in rural areas and on the farms? Has the industry explored all the possibilities for treating warehouses whose sanitation standards are not as they should be? Are PCOs conscientiously giving good service? The answer to these questions, Mr. Clark concluded, will determine the future of the pest control industry. "PCOs have an important place in the food industry," he said, "Set your sights high and meet the challenge of the times which is demanding a full consciousness of sanitation."

Flies, roaches and rodents are the chief problems in Federally inspected meat establishments according to Dr. R. K. Somers whose talk covered this subject. He warned PCOs of nurturing the idea seemingly instilled in the minds of some meat packers that rats will always be present in meat plants, and presented the following four points for dealing with this problem: 1. Eliminate breeding spots in the vicinity of the plant, such as, livestock pens and similar places; 2. Prevent the entrance of rats into the establishment by good rat proofing. (Dr. Somers here pointed to precautions needed to be taken for closing all openings made in the building by maintenance men.); 3. Good sanitation and housekeeping will eliminate 50 to 60 per cent of the problem; and 4. Use only approved rodenticides.

The speaker closed by saying PCOs can render a valuable service by pointing out to meat packers the signs of early infestation so that immediate steps can be taken to prevent probable contamination.

Dr. Kenneth L. Milstead, discussing, "The Food and Drug Administration Looks at the Pest Control Operator and the Food Manufacturer," pointed to the danger of using poisonous rat tracking powders in food plants and to careless baiting practices with 1080. In the former instance, he said, rodents may carry the powder to the foods themselves, or it may penetrate cloth bags to the product. It is the lesser of two evils to have pests than to have a careless or uninformed pest control operator, the speaker warned. PCOs have an important place in preventive sanitation, but they must be adequately trained and aware of the fundamentals which go to make up a competent sanitarian. They must avoid any practices which are unethical or ill-conceived. Criminal negligence on the part of any PCO cannot

will never be any

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be tolerated and his actions must not be considered a necessary hazard in food production.

Concluding the sanitation session was Bartlett Eldredge whose talk, "Truth or Consequences," is "off the record." The speaker did point out, however, that dispute is not laid to statements by government officials that certain pesticides were dangerous, but rather to the interpretation of these statements by food manufacturers. He called for government men to get together with food industry representatives and PCOs in order to unify their ideas.

On Wednesday afternoon delegates met to hear John V. Osmun, professor of the pest control course, Purdue University, who spoke on "Courses for the PCO," and William O. Buettner, who discussed the "War Situation and Effects on the PCO."

Professor Osmun held that the industry was gaining a professional standing by having pest control courses given in colleges and universities. He described fully these particular studies given at Purdue University and pointed out that they were designed to give the student practical pest control experience as well as thorough text and laboratory work.

The manpower situation is dark Mr. Buettner said, and warned operators to be sure to hire only men who are draft free. Without sufficient manpower PCOs will be unable to get adequate supplies and equipment. He assured listeners that the National Association is doing everything in its power to bring to the government a realization of the industry's needs.

Following Mr. Buettner's comments the group broke up to attend separate sessions. Group "A" heard papers given on "Pension Plans" and "Mothproofing Problems," by James Stevenson of the Massachusetts Mutual Life Insurance Co., Cincinnati, and Dr. Ralph E. Heal, NPCA Technical Director, respectively.

Mr. Stevenson, who was introduced by Tracy Evans also of Massachusetts Mutual, outlined the history of pensions in Europe and the United States. He pointed to the following reasons why pension plans were an economic benefit: They tend to overcome the decrease in efficiency in old age; reduce the turnover of personnel; discouraged older men from withholding information to younger employees; attract high-grade personnel; improve morale in the organization; reward loyal employees; help capitalize on social security, and are, in general, a profitable investment.

Dr. Heal emphasized the need for PCOs to recognize mothproofing as only one phase in moth control. "You are dealing with insects universally distributed," he said, "since there are so many foods that these pests can live on." Dr. Heal concluded by reiterating the precautions he gave at the Purdue conference that must be taken with mothproofing agents. (Pest Control, March, 1950, page 18).

Group "B," meeting at the same time as did delegates attending the sessions already reported for Wednesday afternoon, heard talks by Carl H. Ticer, Supervisor, PCOs, Department of Agriculture, Nashville, Tenn., and Karl Hassler, Secretary, California Pest Control Association.

The concept that law enforcement requires brawn instead of brains is now gone, Mr. Ticer pointed out. "We attempt every means possible to secure compliance with the law" before taking more positive action. Thus, Mr. Ticer remarked, the honest and dependable operator feels free to render satisfactory service and demand a reasonable price for his work. It is the aim of the Tennessee Pest Control Law to assist, not restrict, legitimate operators. With PCO cooperation, the law can be made popular. That kind of cooperation, Mr. Ticer remarked, is making this law a success.

Karl Hassler, known for his new ideas in termite control, suggested that a new concept may be developing. Heretofore, he said, it has been assumed that barriers must be put up to prevent termites from entering susceptible structures. Is there any reason why erradication of the colonies themselves should not be attempted, he asked. Hassler stated that ethylene dibromide has been used experimentally as a soil poison to kill off termite colonies and some measure of success has been achieved. In southern California, he said, some operators have used methyl bromide to realize control by breaking off termite tubes and inserting the chemical to reach the colony.

Honorary Members

Several years have past since honorary members had been picked by the NPCA, but this year it was announced that five have been chosen for that honor. They are: Dr. George C. Decker, Head Entomologist, and Dr. Carl J. Weinman, Illinois Natural History Survey; Dr. John B. Schmidt, Head, Department of Entomology, Rutgers University; Dr. E. F. Knipling, Assistant to the Chief, Bureau of Entomology & Plant Quarantine, USDA; and Walter W. Dykstra, Assistant to the Chief, Branch of Predator & Rodent Control, Fish & Wildlife Service.

Ladies Revel

One hundred and forty-eight ladies registered and nearly all of them have gone home a little tired, but with pleasant memories of the exciting program planned for them by Mrs. William Q. "Vee" Phippard, chairlady of their activities. On-the-go from 8 o'clock in the morning to late in the afternoon, the ladies toured Cincinnati, visited a telecast, saw movies on Hawaii, listened to an expert flower arranger reveal some of his tricks, lunched at the country club and finally elected Mrs. Betty West, wife of Larry West, Rose Exterminator Co., Boston, Mass., as president of the National Lady Bugs for the coming year. At the annual banquet, Wednesday evening, each lady received a beautiful pottery vase to remind her of an eventful three days.

Closing event of the convention was the annual banquet and dance which, this year, featured Countess Maria Pulaski. To say the Countess' presentation was entertaining and surprising is a gross understatement, but we have been sworn to secrecy by the dear lady not to reveal her methods. Bill Warthen, Vogel-Ritt, Cincinnati, enjoyed every minute of it until the very last. Ask him about it; but then maybe he won't tell. Dancing concluded the program.

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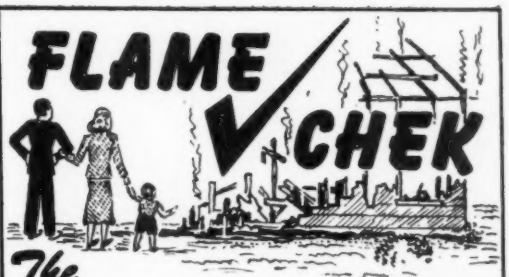

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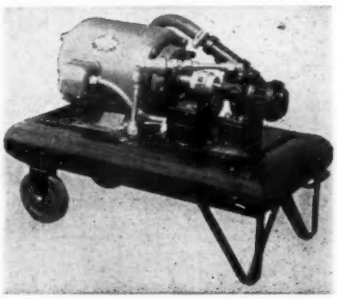

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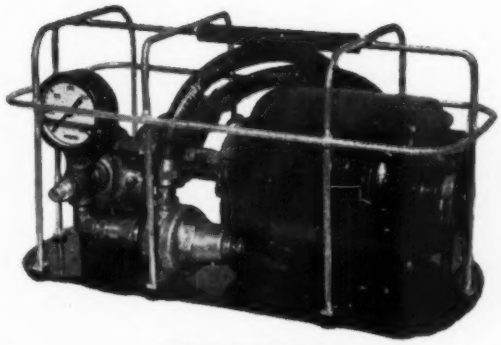

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PEST CONTROL

notebook

By Douglas Katos

•

What About Credit? — Your Customer's, That Is

If there's one thing that brings a smile to our manager's face, quicker than a complaint, it's news that we've received a new contract for monthly service from one of the local establishments. He'll quickly get everything ready and schedule the call so service can begin almost immediately. The cleanout goes well; the place is put in tip-top shape and the customer is happy.

Then something sours.

On the 25th of the month we bill our newly acquired contract. On the 10th of the following month? No check. None the next day, the next, or the next. It's our luck that this small business establishment is a poor credit risk and we may have to wait 60 days to six months to get paid.

Well, we just happened to hit a bad one, we thought. But when it occurred the second time, the manager decided it was time for action. We'll check into the new customer's credit rating before we give the privileges of an open account.

One of the men at a recent local PCO association meeting had suggested that the industry group set up its own credit board which might issue experience reports listing businesses which had not paid their bills. Each member would submit names regularly so the reports would be up to date. Some of the others present felt that such a listing would be difficult to keep up and pointed out that it would not cover those places with which members had never had any contact.

The Retail Credit Association in the town appealed to us since it is receiving reports from its members who are in a wide variety of sales and service. When a grocer is slow in paying for his produce, his wholesaler reports to the local credit association. Should we contemplate servicing that same grocer, we would discover he had been late in dealings with other suppliers and might put him on a C.O.D. basis.

Whenever there is any doubt, we now check with the Retail Credit Association. If it gives a clean report, credit is extended. We likewise report bad accounts. Belonging to our local credit association is about the surest way we've found to protect ourselves against credit losses.

Spray Mold Killer

An aerosol preparation for preventing mildewing on fabrics and leather called Formula J has been developed for household use by the J. W. Johnson Co. of Bellwood, Ill. Active ingredient is Milmer 1, a mold killer manufactured by Monsanto Chemical Co. of St. Louis.

Not considered toxic to humans, according to Johnson Co. officials, the chemical reportedly kills common molds that cause decay and stain. PCOs may write to the manufacturers or to Monsanto for more information.

have you tried..

• IT'S TIP-PROOF!
The special flared skirt fits flush to floor all around...will not tip even if a rat steps on the edge of the container.

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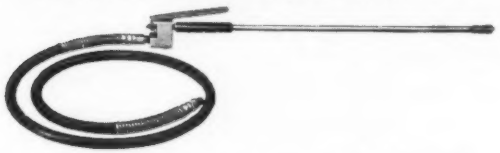

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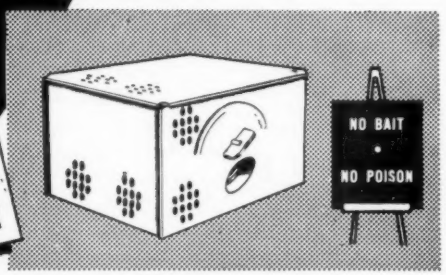

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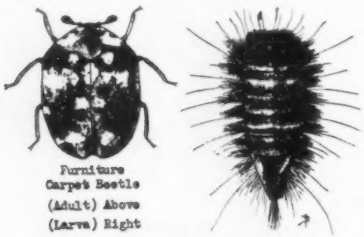
PEST CONTROL

PRIMER

CARPET BEETLES II

Continuing on carpet beetles, our study begun last month, this column gives the essential facts needed to identify both the Furniture and Varied carpet beetles. A list of general characteristics of household carpet beetles which belong to the family *Dermestidae*, is given in the October issue.



Furniture Carpet Beetle (Adult) Above (Larva) Right

Furniture Carpet Beetle

Anthrenus vorax Waterh

Description:

Adult: Oval, covered with white and yellow scales mixed with numerous brown patches to give a mottled appearance on top surface. Is white on underside. Length: 1/8 inch.

Larva: Similar to larva of common carpet beetle. Chestnut brown, with many long tufts of hair that stick straight out from the body and three pairs of lateral brushes at rear end and a long loose tuft at the very end. Length: approx. 1/8 inch.

Life History:

Egg: Development time: 1 to 3 weeks. Laid on food material.

Larva: Development time: 3 to 12 months.

Pupa: Development time: 2 to 3 weeks.

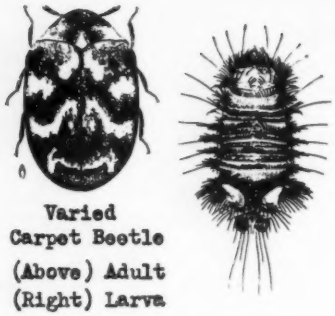
Adult: Live about 2 to 3 weeks.

Habits and Habitat:

Larvae prefer hair-filled furniture, brushes and carpeting. Also feed in vegetable products such as cotton and linen. *Adults* cause no damage.

Economic Importance:

Injurious to fabrics.



Varied Carpet Beetle
(Above) Adult
(Right) Larva

Varied Carpet Beetle

Anthrenus verbasci Linn

Adult: Oval. Topside is completely covered with yellow and white scales arranged in zig-zag rows across cover. Underside has fine, long grayish-yellow scales. Length: slightly larger than 1/16 inch.

Larva: Creamy white turning to a series of light and dark-brown cross-bands. Underside is pinkish. Covered with stiff hairs arranged in cross-rows. Has tufts of hair at rear end. Length: about 3/16 inch. Similar in general appearance to Furniture carpet beetle.

History and Habits:

Varied carpet beetle has a development similar to the Furniture carpet beetle. Larvae eat both animal and vegetable matter.

Next: Common Carpet Beetle (sometimes called Buffalo Moth or Buffalo Beetle) and Cabinet Beetle.

1080 Filmstrip

A 35 mm. sound filmstrip entitled "1080—A Rat Poison for Professional Use," is now available on short loan, without charge, to all professional rodent control groups in government and private enterprise from the Medical Director in Charge, Communicable Disease Center, 605 Volunteer Bldg., Atlanta, Ga.

Valuable for training professional rodent control personnel in the use of safe and effective 1080 procedures, the filmstrip stresses the favorable and unfavorable physical and chemical properties of this powerful but dangerous rodenticide.

An instructor-guide is also furnished each borrower when confirmation of booking is sent. The film runs 15 minutes with 72 frames. Ask for Filmstrip No. 5-124.

Environmental Sanitation Meet

Southern California and San Diego sections of the National Association of Sanitarians together with the Department of Public Health and Department of Institutes and Lectures, University of California, will hold a conference on environmental sanitation November 16 and 17, at the University's Los Angeles campus.

Its purpose is to consider through in-service training, solutions to problems in sanitary science and public relations as proposed by working sanitarians. Notable speakers from the University of California's Public Health Department, nearby municipal health departments and U. S. Public Health Service will appear on the program.

Application for enrollment should be made to the Information Office, University Extension, University of California, Los Angeles 24, Calif. The fee is $2.00 per person.

Commonwealth Expands in NYC

Commonwealth Sanitation Company has moved its New York offices to larger quarters on the 63rd floor of the Chrysler Building, according to an announcement by company president, L. L. Crosby.

Sales manager at the new location is Theodore Riedeburg, formerly with Dow Chemical Co. and Westvaco Chemical Corp. He will have charge of Commonwealth sales activities in New York, New Jersey and New England. The firm now has 18 offices in principle East and Mid-West cities.

NCSE Meeting Place Changed

Location of North Central States Entomologists meeting originally scheduled for Michigan State College in E. Lansing has been changed to the Commodore Perry Hotel, Toledo, Ohio. Dates, however, remain the same, March 21-22, 1951.

Hotel reservation cards from the Toledo Convention & Visitors Bureau will be mailed to all persons on the NCSE mailing list at a later date.

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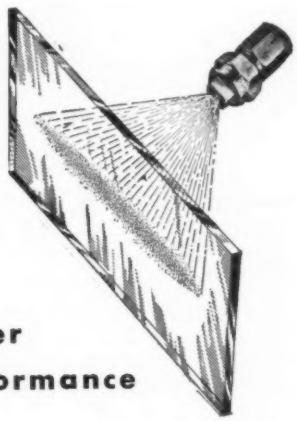

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PEST CONTROL

NEWS

Sempliner Charges Detroit Violates Own Rat Ordinances

Recent charges by Myron Sempliner of Eradico Products Co., Detroit, Michigan, that the city was one of the biggest violators of its own rat-proofing, garbage and receptacle ordinances, was partly admitted by Detroit officials.

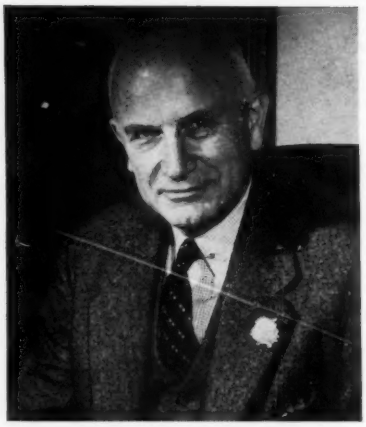
In a talk before the management division of the Detroit Real Estate Board he declared that excuses from managers of city property stating no rat proofing need be done because some day the buildings would be torn down, are senseless. He also stressed Detroit's need for centralized control over the rat problem, saying that the various city departments work in opposite directions.

Dr. Joseph G. Molner, city health commissioner, admitted the Rat Control Division of the Health Department finds many violations of sanitation and rat control ordinances in city properties. He insisted however, that all departments do cooperate if violations seem a menace to public health.

Jennings, Benmosche Stricken

E. R. "Bud" Jennings, Guaranteed Sanitation, Inc., New York city, scheduled to appear on the NPCA convention program, was attacked with coronary thrombosis Tuesday morning, October 17. He is resting in the Polyclinic Hospital, West 50th Street in New York, where he is reported to be improving.

Jack Benmosche, president of Pest Control Equipment Co., New York, N. Y., had traveled with his wife, Betty, to Cincinnati, arriving Saturday evening, October 21. On Sunday morning, just before supervising the arrangement of his display, he was stricken with a heart attack and rushed to the Cincinnati's Bethesda Hospital. Jack is recovering slowly, but he will not be able to return to New York until sometime during the middle of November.



Pennsalt Pres., George B. Beitzel

Pennsalt Has 100 Year Fete

Pennsylvania Salt Manufacturing Co., one of the nation's oldest chemical firms and leading producers of technical insecticides, reached its 100th birthday recently. Various events including luncheons, tours and dinner parties for Pennsalt's employees, were held at the company's Whitemarsh Research Laboratories, Chestnut Hill, near Philadelphia, Pa.

Speaker for the first centennial event, a luncheon held Monday, September 25 for the company's shareholders, was the Honorable James H. Duff, Governor of the State of Pennsylvania. George B. Beitzel, Pennsalt's President, spoke to the company's industrial and business friends at a luncheon, Wednesday. The celebration ended Friday with a meeting and dinner for all members of the firm's sales organization, Philadelphia and Whitemarsh employees and their wives, at Whitemarsh.

Dates for '51 Purdue Confo

Dates for the next Annual Purdue PCO Conference have been set for February 5-9, 1951, according to latest word from Professor J. J. Davis, Chief in Entomology, Purdue University, Lafayette, Indiana. John V. Osmun, professor of the pest control operators course, informs us that discussion emphasis will be given to "Ants" and their control, voted at the last Purdue meeting to be "pest-of-the-year" for the '51 conference.

Baltimore Rodent Control Meet

Leading public health officials and outstanding authorities in the field of rodent control met in Baltimore, Maryland's Hotel Emerson October 9, 10 and 11, for the Second Baltimore Rodent Control Conference. The event was organized and presented by Baltimore's City Health Department and the U. S. Fish and Wildlife Service, Department of Interior.

Fish and Wildlife Service authorities who were on the conference program included: Dorr D. Green, Chief, Branch of Predator & Rodent Control; Walter W. Dykstra, Assistant to the Chief, Branch of Predator & Rodent Control; John C. Jones, Mammal Control Supervisor, BP & RC; Howard A. Merrill, Boston, Mass., District Agent; E. M. Mills, Mammal Control Supervisor, New Brunswick, N. J.; Galen Oderkirk, Lafayette, Ind., District Agent. Other government speakers were, J. W. Sanders, U. S. Food and Drug Administration, and J. J. Fitzpatrick, U. S. Public Health Service.

New 3-Way Acme Mask

A new triple-utility gas mask permitting the use of either chin or chest canisters, or hose connections, has been announced by Acme Protection Equipment Co., 3037 W. Lake St., Chicago 12, Ill.

Known as the No. 6 face piece the mask retains the full-vision characteristic of other Acme masks and the dead-air check valve. Among other innovations is a new type inhalation-exhalation valve for minimum breathing resistance.

PCOs can secure a bulletin, No. 504, which shows sectionalized views of the face piece by writing to the company.

Biltmore Exterminating Expands

Biltmore Exterminating Co., Inc., of Atlanta, Georgia, has moved into new and larger quarters at 1045 Spring St. according to company president Forrest H. Knox. Branch offices are located in Columbus, Macon and Chattanooga.

New Insect Control Device

One answer to the problem of controlling flies, mosquitoes, gnats and moths indoors is claimed to have been perfected by Remington Products Corporation, 410 N. Broad St., Elizabeth, N. J.

The device, called Automatic "Insect Control," is a simple mechanism that is affixed to the wall about three feet below the ceiling and plugs into the standard AC or DC outlet. It is thermostatically controlled to work automatically and vaporize a special formula insecticide. Remington officials claim "Insect Control" is odorless, stainless and will not affect humans, animals or foodstuffs, and that it contains no acetone or kerosene, as found in some ordinary sprays.

Units are being sold through franchised distributors. PCOs may get more information by writing the manufacturers.

Prentiss Booklet on Warfarin

A complete description of Rax Powder, the rodenticide containing warfarin, is given in a new 12 - page, two - color illustrated booklet recently issued by the Prentiss Drug and Chemical Co., 110 William St., New York 7, N.Y. The chemistry of warfarin and its reaction on rats is set forth in detail.

Authors of "Rax Powder" have also included the story of the rodenticide's commercial development, what users say about it, directions for labeling, and advantages to PCOs, food sanitarians, health officers and rodent control supervisors. A special section is given to rat control and the farm market, plus a suggested retail price schedule.

New Electric Deodorizer

A new electric room deodorizer is being introduced by Electric Deodorizer Corporation, 9993 Broadstreet, Detroit 4, Mich., under the trade name, "Odor-Master."

The 'Odor-Master' is loaded with an O-M Deodorant wafer, Pine or Floral scent, and plugged directly into any AC-DC outlet. A heating element activates the ingredients in the wafer and circulates the "activated" air into the room. According to manufacturers, this definitely kills odors and leaves a fresh delicate fragrance.

Retail price is $1.29 in any department, chain, drug, hardware or grocery store. A two-week supply of wafers is packaged with each 'Odor-Master' unit.

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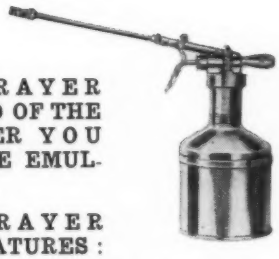

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New Short Drill Bits

A new line of extra short bits especially designed for drilling in concrete and masonry has been announced by Concrete Termite Drill Co., 2106 Foothill Blvd., Pasadena 8, Calif.

Known as "Stubbies," these new bits have an overall length of 4"

and are furnished in sizes for drilling holes ranging from ¼" to ⅞" in diameter with size increases of 1/16". "Stubbies" have shank diameters of ¼ to ½ inch and can be used in electric drills, with air motors or hand braces.

Because of the cintered tungsten-titanium carbide put into "Stubbie" bits, manufacturers claim they penetrate concrete and masonry at high speeds and require less pressure. More information may be obtained from the factory or from the company's Eastern Sales Office at Room 5131 Empire State Bldg., New York city.

Nixalite Bird Repellent

Pigeons, starlings, sparrows and other bird pests can be kept from building ledges and other surfaces by Nixalite, a mechanical bird repellant manufactured by the Nixalite Company of America, 115-119 West 3rd Street, Davenport, Iowa.

Nixalite is a combination of needle sharp stainless steel wires projecting upward and outward from a stainless steel base which comes in four foot lengths. It can be attached to any surface with the special clips and fasteners which accompany the device. Manufacturers claim that birds instinctively fly away from surfaces protected by the repellent to avoid being pricked. Ledges cornices, sills, signs, guy wires, copings, conduits, ridges, railings, lintels or curved or angular surfaces are places where Nixalite can be effective. All humane laws are complied with, company officials say.

Nixalite can also be effective in repelling rodents from climbing trees, ship moorings, grain bin and corn crib supports, burrowing under or into buildings and other places where these pests are in the habit of gnawing or climbing. More data can be obtained by writing the Nixalite Company.

Exams for Florida PCOs

Examinations for certification of structural pest control operators in the state of Florida will again be held December 11, 12 and 13, 1950, in Newell Hall, University of Florida, Gainesville.

Tests in the following categories will be given: A — General Principles of Entomology, Economic Zoology and Construction, December 11, 2-5 p.m.; B — Termites and Other Wood Infesting Organisms, December 12, 9 a.m. to 12 noon; C — General Household Pests, December 12, 2-5 p.m.; D — Rodent Control, December 13, 9 a.m. to 12 noon; E — Fumigation, December 13, 2-5 p.m.

Individuals interested in obtaining Florida certification as pest control operators should write the Secretary, Florida Structural Pest Control Board, P. O. Box 2728, University Station, Gainesville, Fla., requesting the necessary application forms and information.

Kansas City Rat War Praised

An intensive rat control campaign currently being carried on in Kansas City, Missouri, has been termed by U. S. Public Health Service officials as one of the outstanding efforts in the nation. This commendation was sent in a letter recently to Dr. H. L. Dwyer, Kansas City health director.

Speaking before the town's Alpha Lions club, Dr. Dwyer said that since the city's rat control ordinance was passed four years ago, large sections of Kansas City have already been rat-proofed.

Magnus Aids Hoover Commission

Percy C. Magnus, president of Magnus, Mabee and Reynard, Inc. of New York, dealers in drugs, chemicals and essential oils, has been appointed chairman of the Essential Oils and Related Groups of the Greater New York Citizens Committee for the Hoover Report. In this office he will enlist support for the education program for adopting recommendations of the bipartisan Hoover Commission towards reorganization of the executive branch of government.

New Versatile Black Light

Locating and identifying insect and rodent contamination can be made easier by using the new Menlo Fluoretor, a versatile black light being produced by the Menlo Research Laboratory, P. O. Box 522-JX, Menlo Park, California.

Units are available operating on 115-volt 60-cycle power or self-energized from two standard flashlight batteries. Power supplies and light-source heads are instantly interchangable. No ballasts, starters or filaments that may fail, are utilized.

All models have an integral dark chamber into which samples of contamination may be placed for examination in daylight, or a rubber end piece that will exclude light from part of a large area under investigation. Where darker conditions exist, the chamber can be removed and the Fluoretor used as an ultraviolet flashlight. A three-power magnifying focusing eyepiece is in the chamber.

The instrument comes packed in a wooden carrying case. A leather holster is also available for field use. PCOs may address inquiries on the Fluoretor to the manufacturers.

DO YOU WANT ADDITIONAL WORK?

We seek contact with reliable, thoroughly experienced pest control operators in cities from coast to coast to service national chain store contracts for us. Excellent opportunity for you to secure very sizable business as a result of our nation-wide promotion. If interested, write immediately giving full details covering your business status and experience.

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ORGANIZATION NEWS

Iowa PCA Talks Rat Baiting

Increased use of warfarin and resultant baiting and bait station problems received emphasis at the third Regional Conference of the Iowa Pest Control Association held at Hotel Montrose, Cedar Rapids, September 28 and 29. Fly control, structural termite work and safety equipment were other important subjects of discussion meetings which 36 members and guests attended at the two-day session.

Speakers for the warfarin and baiting talks given the afternoon of the first day were: Dr. Harold Gunderson, Iowa State College extension service, who presented a history of the new rodenticide, and attending PCOs, themselves, who brought samples of bait stations they used. A rat control bait mixing demonstration with warfarin was also given by members of Modern Pest Control Co. of Cedar Rapids.

In the morning, preceding the baiting discussions, a talk on fly control and this season's results, and a question-answer session on the pest control firms' position relative to chemical fly control were given. Dr. Gunderson and Iowa PCA President O. L. Dennis, presided. After dinner speakers at the evening banquet were Harold Ward and Jack Hat of the Young Men's Bureau of Cedar Rapids.

Modern Pest Control Co. operators began activities the following day with papers on termites and inspection of structures. John P. Linn, Industrial Pest Control Co., Omaha, Nebraska, covered the importance of structure modification in termite control.

In the afternoon, Lee Winger, president, Cedar Rapids Restaurant Operators Association spoke on the restaurant operators' view of the pest control industry. He was followed by Harold Paine of Mine Safety Appliances Co., Des Moines, who talked about safety equipment. PCO, C. J. Brookstra concluded talks with an outlook on the future of the Iowa pest control industry.

At the business meeting which ended the conference Iowa PCA members began action on plans to incorporate their association.

N. E., Conn. Fete Suppliers

Suppliers to the pest control industry will be given an opportunity to display their wares at a joint meeting of the New England and Connecticut Pest Control Associations to be held at Hotel Sheraton, Worcester, Mass., November 16.

Over twenty suppliers have already accepted invitations to be present at the meeting to be known as "Supplier's Night."

President George W. Dyar of the Connecticut Association and Kenneth N. Cook, New England PCA president, will preside over brief business sessions also scheduled for their respective groups.

Iowa Pest Control Association members who attended the group's third regional conference.

Conn. PCA Votes New Members

Two new members were voted into the Connecticut Pest Control Association at the group's October meeting held in Hartford. They are: Ernest F. Bourgeois, E-B Exterminating Co., East Haddam, Conn. and Fred A. Klett, Capitol Pest Control Service, Hartford.

CALENDAR OF MEETINGS

New York State Insecticide & Fungicide Conference, Ithaca, N. Y., Nov. 14-16.

New England and Connecticut PCA Joint Meeting, Hotel Sheraton, Worcester, Mass., Nov. 16.

National Association of Sanitarians Institute on Environmental Sanitation, Los Angeles Campus, University of California, Nov. 16, 17.

Michigan Public Health Association 1950 Conference, Pantlind Hotel, Grand Rapids, Mich., Nov. 29-Dec. 1.

Chemical Specialties Manufacturers Association 37th Annual Meeting, Hotel New Yorker, New York City, Dec. 3-5.

Ohio Pest Control Association Annual Meeting, Biltmore Hotel, Dayton, Ohio, Dec. 4-6.

Florida Structural Pest Control Exams, Newell Hall, University of Florida, Gainesville, Dec. 11-13.

North Central Weed Control Conference, Milwaukee, Wisc. Dec. 12-14.

Synthetic Organic Chemical Manufacturers Association Annual Meeting, Commodore Hotel, New York City, Dec. 13.

Eastern Pennsylvania Pest Control Association Meeting, Robert Morris Hotel, Philadelphia, Pa., Dec. 14.

American Association of Economic Entomologists Meeting, Cosmopolitan Hotel, Denver, Colo., Dec. 18-21.

Northeastern Weed Control Conference, Hotel New Yorker, New York City, Jan. 3-5.

Second Plant Maintenance Show and Conference, Public Auditorium, Cleveland, Ohio, Jan. 15-18, 1951.

Alabama Pest Control Association Meeting, Montgomery, Ala., March 9, 10, 1951.

North Central States Entomologists Meeting, Commodore Perry Hotel, Toledo, Ohio, March 21, 22, 1951.

Canadian Pest Control Operators Association 9th Annual Conference, Ontario, Agricultural College, Guelph, May 7-9, 1951.

Buettner Visits Ark. PCA

Legislation governing pest control, the effect of war shortages and new developments in chemicals were top discussion subjects at a special call meeting of the Arkansas Pest Control Association September 13, in Little Rock. A visit from William O. Buettner, NPCA Executive Secretary, occasioned the special meeting to which 23 members and guests came.

A committee was appointed to study existing legislation and includes members: W. A. Black, Earle, Ark.; R. G. Curry, Pine Bluff; Myron Smith, Memphis, Tenn.; and, Ernest B. Murrell, Little Rock. Association president Jay Heflin and Wordie W. Evans, industry representative to the State Plant Board will serve as ex-officio members of the committee.

Arkansas Pest Control Association leaders pose with William O. Buettner, NPCA Executive Secretary. Left to right, standing, are: R. G. Curry, Carl Whitson, and Daglen Foster. Seated are: Ernest Murrell, Mr. Buettner and Jay Heflin.

Cal. PCOs Form Central District

Central California members of Pest Control Operators of California, Inc., received approval by the association's Board of Directors to form a separate district at a meeting recently held in Los Angeles.

A Charter was presented to the new District when the group met in Fresno. Members who make up the new division are: Ernest Crutchfield, Chairman, Jack Ahern, C. P. Cain, Charles F. Clark, Jr., James F. Clark, Charles C. Delk, Harold Draper, Everett Flake, Floyd Hargrove, Val Key and Otis E. Wheeler.

Formation of the Central California District increases the number of District organizations to six.

Mo. PCA Short Course Stressses Aid to Farmers

Rural pest control and what the PCO can do to help the farmer was theme and subject of a two-day short course presented by the Missouri Pest Control Association September 15 and 16 at the University of Missouri at Columbia.

Approximately 75 PCOs, farm leaders, extension officials, county agents and others interested in rural control problems gathered at the university to hear 25 speakers, including three government officials, cover over 30 subjects relating to farm pest control.

Discussions revealed the increasing need by farmers for pest control products, reliable services and expert advice. Most urgent were the needs in custom spraying, rodent control, stored grain protection and livestock spraying. Farm home, poultry and fruit spraying also ranked high.

J. Ross Fleetwood, extension specialist in field crops, in his talk on approaching rural control problems through the county agent, said that the county agent has various committees and organized groups of farmers and can show them what to use and how to use it, but he does not have the chemicals and equipment. This is where groups such as the Mis-

(Continued on page 40)

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Managers for Branch Offices. Rapidly expanding pest control firm requires several high-type men to manage offices in Ohio and Pennsylvania. Must have initiative, ability and forcefulness. Prefer graduate entomologists with practical experience. Will also consider applications from men now in the pest control field who possess good education, sound technical and business background. Excellent opportunity to become associated with progressive organization enjoying solid financial position. Salary and percentage. Submit complete data: age, education, experience, and other pertinent details, together with photo. All replies strictly confidential. Write Mr. L. L. Crosby, President Commonwealth Sanitation Co., 3567 Bigelow Boulevard, Pittsburgh 13, Pa.

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Chemist—Entomologist (Ph.D.) Outstanding man wanted to head service department of large, rapidly expanding pest control firm with home offices in Pittsburgh and branches in 18 cities. Candidate should have seasoned experience in insect toxicology, economic entomology and field work. This is an important position for a man possessing managerial ability plus. Salary commensurate with ability and experience. All replies strictly confidential. Submit account of academic and professional training, past affiliations, earnings, photo and any other pertinent facts to: Mr. L. L. Crosby, President, Commonwealth Sanitation Co., 3567 Bigelow Boulevard, Pittsburgh 13, Pa.

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Insecticide and Chemical Manufacturing Distributing concern, Houston, Texas. This is the opportunity of a lifetime for an individual or salesmanagers, salesmen, entomologists and chemists to get into an established business for themselves, with nominal investment by pooling their resources and acquiring a going incorporated business with proven consumer acceptance formulations trademarks, equipment, inventory and a substantial number of accounts sending in repeat orders throughout the year.

This corporation is now engaged in formulating and distributing in the small package field of insecticides, fungicides and pest control products, being featured by leading nurseries, landscape concerns, greenhouses, florists, department, seed, feed, drug stores, of southern states from New Mexico to Carolinas.

Owners desire to retire from the business and will give liberal terms to parties of ability and integrity. You may reply in strict confidence giving your history and amount of cash capital you are able to invest. Write Box 241, Pest Control magazine.

FOR SALE

Tifa fogging unit with 1943 Jeep plus live accounts — $895.00. Write P. O. Box 1702, Springfield, Mass.

Mo. PCA Short Course

(from page 39)

souri PCA can enter the picture. "We can all tell the farmer the same story and get some results," he said.

Dr. Leonard Haseman of the university's Department of Entomology, added, in this respect, that although pest control service is still young, it is destined to rank with medicine and veterinary services. "Until regulation is established the state associations will have to protect its reputation," he stated. The thought expressed here by Dr. Haseman and other speakers was that technical advice for a fee, in conjunction with service or the sale of products or just advice as to where to get materials, is urgently needed.

Government speakers were Dr. Richard T. Cotton, in charge of Cereal and Forage Insect Investigation, USDA, Manhattan, Kansas, who talked on both the control of stored food pests in country and city homes and controlling stored grain pests on the farm; Joseph W. Hunt, U. S. Public

(Continued on page 42)

PCE To Supply Steel Wool

Stainless-steel wool, recently found effective for rat-hole stoppage, is now available from Pest Control Equipment Co., 47 West 43rd Street, New York 18, N. Y., according to Jack Benmosche, president of the company. This material will be supplied in amounts of one pound or over, more appropriate for trial use than the 25-pound standard package available from larger steel wool firms.

Beal Heads USDA Forest Work

Dr. James A. Beal, well known authority on forest insects, has been appointed head of the USDA's Division of Forest Insect Investigation, according to Avery S. Hoyt, Chief, Bureau of Entomology & Plant Quarantine.

Dr. Beal succeeds Dr. F. C. Craighead who retired in June of this year.

STATEMENT OF OWNERSHIP

Statement of the ownership, management and circulation required by the Act of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946, of Pest Control, published monthly at Painesville, Ohio, for October 1, 1950.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Trade Magazines, Inc., 1900 Euclid Building, Cleveland 15, Ohio; Editor, James A. Nelson, 1900 Euclid Building, Cleveland 15, Ohio; Managing editor and business manager, none.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

JAMES A. NELSON, Publisher

Sworn to and subscribed before me this 2nd day of October, 1950.

CHARLES V. DAMON, Jr., Notary Public

My commission expires July 22, 1952

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PESTALES

At the NPCA Convention . . . One of the less-appreciated husband PCOs standing by the registration desk remarked to a friend, "My wife claims I'm blind, but when it comes to women, I certainly have a 20-20 imagination!" . . . Jim Steckel, docked in New York from a European tour of duty for the U. N., then flew down to join his dad "Doc," at the meeting . . . Not so noteworthy was the constant breeze caused by the quartette, Ruth Weisburger, Lee Hess, Jean Bailie and Norma Goldman who sailed in and out Cincinnati department stores and specialty shops spending papa's hard-earned green-stuff . . . Next time you see Prentiss' Helena Whelan, ask her about her new French soap. It's a conversation stopper! . . . When it comes to tripping the light fantastic, better look up to Carney and Mrs. Carncross whose flourishing dance steps need 25 sq. feet of floor to execute . . . Karl Hassler and Arnold Alderman couldn't do too much bragging about California weather, since the Queen City was in her summer best during the meeting. They did get in a lick by sending some of us deluxe california dates which we're nibbling at while writing this report . . . Lookout points in Kentucky seemed to hold a peculiar fascination for some delegates. We were there, of course, as **observers,** but I'd rather they'd put slings on those one-arm bandits so they'd keep their hands out of my pockets . . . Over $450 was contributed by friends of Jack Benmosche to help defray his hospital expenses while he is confined to Cincinnati as a result of a heart attack . . . Never saw Mrs. Helen Buettner looking better. She was a picture of radiant health and joy; maybe it's attributable to the new oil burner in the Buettner house, ending Helen's coal-shoveling problems . . . Otto Orkin, the Crosby brothers, Abe Ritt and Bill McCain were looking very natural with their special tables of company personnel . . . Was it all business that kept the men swarming around Dow's Dorris Krause's table at breakfast time? She says it was.

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Mo. PCA Short Course

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Health Service, who discussed the rat as a menace to public health: and, William D. Fitzwater, Assistant District Agent, U. S. Fish and Wildlife Service, Branch of Predator and Rodent Control, who reported latest findings on controlling rats by baiting and trapping, and reviewed a rodent control program.

Credit for arranging the short course program goes to Dr. Haseman, chairman of the University committee, and his staff which includes: Associate Dean Sam B. Shirkey, Dr. Elder and Professor T. J. Talbert. Association members on the program committee were: T. C. Raley, Getz Exterminators, Inc., St. Louis; Charles Denney, Denney & Co., St. Louis; secretary Jac Shafer, Shafer Pest Control Service, St. Louis; A. J. Danella, Acme Exterminators, Kansas City; Reynold Schuyler, Kansas City and the Huffman brothers of Sedalia. Presiding at the various sessions were J. O. Millspaugh, association president, Jac Shafer and A. J. Danella.

Attending PCOs also initiated a Student's Loan Fund to be used by the university's Department of Entomology. Charles Denney heads a committee that will handle this fund to its completion.

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Yes, sir... termites do their deadly damage, under cover, around the clock! There's **no** let up in their destruction, **no** time when they're not undermining wood structures! But... ***TERRA TOX*** works ***fast*** and ***constantly,*** too... effectively knocking out termites and powder post beetles everywhere... every time! Terra Tox is so powerful because it contains Monsanto's Penta, famed chemical that assures ***lasting*** results!

THERE'S a TERRA TOX for every control problem.

255 Concentrate, 10 to 1, One Gallon makes 11 gallons!

235 won't stain... almost odorless, when diluted one to four with light petroleum oils.

245 speedy and deadly... contains Penta and Orthodichlorbenzene.

225 slightly dark, ideal where discoloration is not objectionable.

218 is Odorless, ideal for buildings where foodstuffs are stored.

THEY'RE *Yours* FOR THE ASKING:

- TERRA TOX Manual of Instructions
- MAILING PIECE (at nominal cost)
- ADVERTISING MATS.
- Reprints of TERRA TOX National Ads.

WOOD TREATING Chemicals Co.

5137 SOUTHWEST AVENUE
SAINT LOUIS 10, MISSOURI

RESIDUAL APPLICATORS that make money

because they save money!

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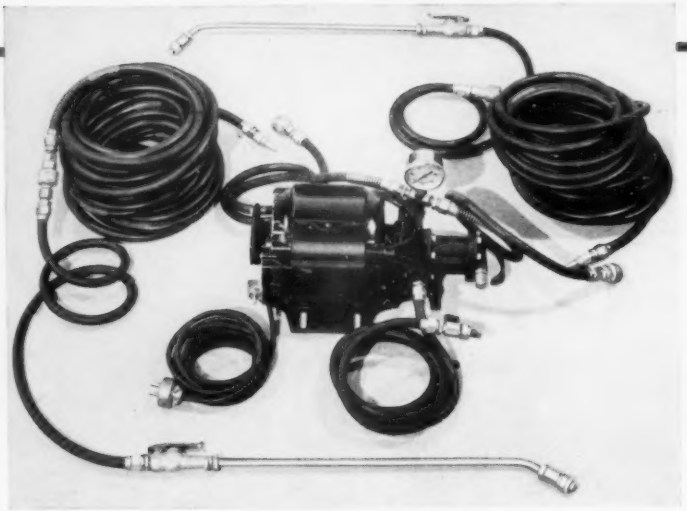
● For use in warehouses, factories, hotels, theatres, outdoors for lawns, weeds, shrubs, small trees . . . for such jobs as flies, carpet beetles, large roach jobs, etc., moth-proofing and flame-proofing. Termite work.

High-precision gear pump, strain-free motor; oil, water and chemical resistant stainless steel driving gear. Driven gear of self-lubricating plastic. Quiet operation.

Outfit includes 100 ft. PCE oil-resistant hose; 18" aluminum extension; leakproof valve; set of 3 different capacity fan pattern nozzles; 6' Underwriters' Approved Neoprene oil-resistant cord; 6' intake hose with strainer; 6' return line; 200 lb. pressure gauge; 110 V 60 cycle AC motor (DC available); renewable hose end adapters and two sets of snap-on hose couplers.

ALL COMPLETE FOR ONE MAN OPERATION, ONLY $150.00 F.O.B., New York. Weight of motor and pump — 27 lbs. (Weight complete 45 lbs.)



ELECTRIC RESIDUAL APPLICATOR

HELPS YOU LICK YOUR COST PROBLEMS!

STAINLESS STEEL TANK TYPE SPRAYER

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2 QT. RESIDUAL APPLICATOR

● Here's a lot of sprayer for the money. Chrome finished all brass tank. Easy to clean. Professional in appearance. Has top-mounted easy-to-read pressure gauge with unbreakable crystal. Easy top fill. Check valve prevents dripping or accidental discharge when extension is removed. No soldered inlets. ALL MECHANICAL SEALS WITH LIFETIME KOROSEAL GASKETS. Can be operated with one hand.

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